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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1887.

No. 169.

RICHARD HOSKIN, JOSEPH H. HOSKIN, R. R. CRAIG,
AND JOSEPH CRAIG, APPELLANTS,

vs.

FRANK H. FISHER AND JOSHUA HENDY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR
THE DISTRICT OF CALIFORNIA.

FILED NOVEMBER 1, 1884.

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1 *Subpœna.*

UNITED STATES OF AMERICA :

Circuit Court of the United States, Ninth Circuit, District of California.

The President of the United States of America to Richard Hoskin, J. H. Hoskin, Joseph Craig, and R. R. Craig, greeting :

You are hereby commanded that you be and appear in said circuit court of the United States aforesaid, at the court-room in San Francisco, on the first Monday of June, A. D. 1880, to answer a bill of complaint exhibited against you in said court by Frank H. Fisher, who is a citizen of the State of California, and to do and receive what the said court shall have considered in that behalf; and this you are not to omit under the penalty of five thousand dollars.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, this 8th day of May, in the year of our Lord one thousand eight hundred and eighty, 2 and of our Independence the 104th.

[SEAL.] L. S. B. SAWYER, *Clerk*,
By J. F. O'BEIRNE, *Deputy Clerk.*

Memorandum Pursuant to Rule 12, *Supreme Court U. S.*

You are hereby require- to enter your appearance in the above suit on or before the first Monday of June next, at the clerk's office of said court, pursuant to said bill; otherwise the said bill will be taken *pro confesso.*

L. S. B. SAWYER, *Clerk*,
By J. F. O'BEIRNE, *Deputy Clerk.*

U. S. MARSHAL'S OFFICE, DISTRICT OF CALIFORNIA.

I hereby certify that I have rec'd the within subpœna on the 8th day of May, A. D. 1880, and on the 10th day of May, 1880, in the city and county of San Francisco, in this district, I personally served the same on R. R. Craig, one of the within-named defendants, by delivering to and leaving with him, the said R. R. Craig, a 3 certified copy thereof; and I further certify that on the 11th day of May, 1880, at the county of Yuba, in this district, I personally served the same on J. H. Hoskins, one of the within-named defendants, by delivering to and leaving with the said J. H. Hoskins personally a certified copy thereof; and I further certify that on the 12th day of May, 1880, at the county of Yuba, in this district, I personally served the same on Richard Hoskins, one of the within-named defendants, by delivering to and leaving with Charles J. Hoskins, an adult member of his family, a certified copy thereof; & I further certify that on the 12th day of May, 1880, at the county of Yolo, in this district, I personally served the same on

Joseph Craig, one of the within-named defendants, by delivering to and leaving with the said Joseph Craig a certified copy thereof.

A. W. POOLE,
U. S. Marshall,
By CHAS. HALL, *Deputy*.

(Endorsed:) Filed May 17th, 1880. L. S. B. Sawyer, clerk, by J. F. O'Beirne, dep'y clerk.

4 *Bill of Complaint.*

FRANK H. FISHER and JOSHUA HENDY, Complainants,

vs.

RICHARD HOSKIN, —— HOSKIN, JOSEPH CRAIG, and R. R. CRAIG, Defendants.

To the honorable the justices of the circuit court of the United States for the ninth circuit, within and for the district of California, sitting in equity:

Frank H. Fisher and Joshua Hendy, both of the city and county of San Francisco, State of California, bring this their bill against Richard Hoskin, —— Hoskin, Joseph Craig, and R. R. Craig, residents of the State of California, as defendants.

And thereupon your orators complain and say that heretofore, to
wit, before the twentieth day of December, in the year one thousand
eight hundred and seventy, Frank H. Fisher, one of the com-
5 plainants herein, was the original and first inventor of cer-
tain new and useful improvements in "hydraulic mining
apparatus," which said improvements were not known or used by
others before the invention and discovery thereof by said Frank H.
Fisher, and, at the time of his said application for a patent therefore,
had not been — use or on sale for two years, nor abandoned, nor was
it proved to have been abandoned.

That said Frank H. Fisher, being so as aforesaid the inventor thereof, on the twentieth day of December, A. D. 1870, upon due application therefore, did obtain the letters patent of the United States for the said invention, granting and securing to him for the full term of seventeen years from the last-named date the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention and improvements throughout the United States and Territories thereof.

Said letters patent were issued in due form of law under the seal
of the Patent Office of the United States, and were signed by the
Secretary of the Interior and countersigned by the Commissioner of
Patents of the United States, and bore date the day and year
6 last aforesaid, a description whereof and of said invention
more fully appears in said letters patent, which said letters
patent are in due form of law, and are ready in court to be produced
by this complainant, or a duly authenticated copy thereof.

That thereafter, to wit, on the — day of ——, 187–, upon due application therefor and upon the surrender of said original letters patent, a reissue — to said F. H. Fisher by the Patent Office of the United States. Said reissued patent was issued for the same invention as that described in the original letters patent and contained an amended description of the said invention.

Said reissued letters patent were issued in due form of law under the seal of the Patent Office of the United States and were signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States and bore date the day and year last aforesaid and were numbered —, a description whereof and of said invention more fully appears in said reissued letters patent, which said reissued letters patent are in due form of law and are ready in court to be produced by your orators, or a duly
7 authenticated copy thereof.

That thereafter, to wit, on the — day of ——, 187–, upon due application therefor and upon the surrender of the said last-mentioned reissued letters patent, a second reissue of said original letters patent was granted and issued to said F. H. Fisher by the Patent Office of the United States. Said reissued application was issued for the same invention as that described in the original letters patent first herein mentioned, and contained an amended description of the said invention.

Said second reissued letters patent were issued in due form of law under the seal of the Patent Office of the United States and were signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States and bore date the day and year last aforesaid, a description whereof and of said invention more fully appears in said letters patent; which said letters patent are in due form of law and are ready in court to be produced by your orators, or a duly authenticated copy thereof.

That since the date of said last-mentioned reissued letters
8 patent, to wit, on the — day of ——, 1881, the said Frank
H. Fisher did, by his deed or assignment, sell, assign, transfer, and convey to Joshua B. Hendy, one of the complainants herein, an undivided one-half of all his right, title, and interest in said letters patent and the invention described and claimed thereon, and that said Frank H. Fisher and Joshua Hendy are now the sole owners of said reissued letters patent.

That prior to the issuing of said original letters patent and of each of said reissued letters patent all proceedings were had and taken which were required by law to be had or taken previous to the issuance of letters patent granting special rights and liberties for new and useful inventions.

And your orators further show unto your honors that they have always, since the grant of the first of said letters patent, been in the exercise of the full and exclusive right and liberty so granted as aforesaid; that they have made, constructed, used, and vended to others to be used the said improvement so patented, and have had and maintained, until the infringement hereinafter complained of, exclusive possession of the said improvements and invention under and by virtue of said letters patent, and *has* never acquiesced
9 in *in* any invasion or infringement of *his* said rights.

And your orators further show unto your honors that the respondents herein, having full knowledge of the premises and in violation of your orators' exclusive right, liberty, and privilege as aforesaid, and utterly disregarding the same, have, since the date of said last-mentioned reissued letters patent and before the filing of this bill of complaint, without the license of your orators, at Marysville, California, and elsewhere in the district of California and within the jurisdiction of this honorable court, made, used, and sold to others to be used hydraulic mining machines embracing the improvement and invention described and claimed in said letters patent and so secured to your orators as aforesaid.

And your orators allege that the hydraulic mining machines made and sold by the respondents are infringements of said letters patent and were made according to the invention therein described, and thereby protected and secured to your orators as aforesaid, and contrary to law and the form of the statutes of the United States in such cases made and provided.

10 And your orators show that they are informed and believe and so state to be true that the respondents in this action intend to continue to infringe upon said letters patent and to unlawfully make, use, and sell said invention, as they have already been doing and as they are hereinbefore alleged to have done.

Your orators further show that they have requested the respondents to desist from the making, using, and selling said invention and to account to your orators for the damages which they have sustained, but the respondents refuse either to so desist or account.

And your orators further show unto your honors that they will be subject to great and irreparable injury unless they shall obtain from your honors the relief hereby sought.

To the end, therefore, that the said respondents may, upon their corporal oaths, full, true, direct, and perfect answer make to all and singular the matters hereinbefore stated and charged as fully and particularly as if the same were hereinbefore repeated and thereunto distinctly interrogated according to the best of the
11 knowledge, information, and belief, and more especially that they may answer and set forth—

First. Whether the letters patent were granted and issued by the United States, as in said bill of complaint stated and set forth.

Second. Whether the defendants have made, used, or sold, or caused to be made, used, or sold, since the second day of September, 1879, or have now in their possession, any hydraulic mining machines having a ball-and-socket joint for connecting the discharge pipe with the end of a swivel section in which the joint is formed by having a semi-cylindrical or ball-shaped enlargement at the base of the discharge pipe and a corresponding cup-shaped socket on the end of the horizontally swiveling section; and, if so, how many and how the same are constructed and wherein the same differs from that described in the letters patent herein referred to, if at all.

And that the said respondents may answer the premises
12 and may be decreed to account for and pay over to your orators all such gains and profits as have or might have

accrued to them from making, selling, or using such improvements in hydraulic mining apparatus.

And your orators further pray this honorable court to assess or cause to be assessed the damages which the complainant- has sustained by reason of the premises and the infringement herein complained of, and that said damages when so assessed may be increased to an amount not exceeding three times the sum at which they shall be assessed, and that the respondents be adjudged and decreed to pay over to your orators the damages so assessed and also the amount to which they may be increased in addition to the gains and profits above prayed for.

And your orators further pray that the respondents herein, Richard Hoskin, —— Hoskin, Joseph Craig, and R. R. Craig, their agents, attorneys, servants, workmen, and employees, may be restrained by an injunction issuing out of this honorable court from making, using, or vending to others to be used hydraulic mining
machines embracing the improvements aforesaid so secured
13 to your orator- as aforesaid, and that the hydraulic mining
machines so manufactured or purchased or in any manner obtained by them in violation of your orators' rights and now in possession of said respondents may be destroyed or delivered up to your orators, and for such other and further relief as the nature of the case may require and to your honors m-y seem meet.

May it please your honors to grant unto your orators not only a writ of injunction conformable to the prayer of this bill, but also the writ of subpœna directed to the said Richard Hoskin, —— Hoskin, Joseph Craig, and R. R. Craig commanding them to appear and answer this bill of complaint and to do and receive what to your honors shall seem meet.

And your orator- will ever pray, etc.

J. L. BOONE,
Solicitor for Complainant-.

STATE OF CALIFORNIA, *City and County of San Francisco:*

Frank H Fisher, being first duly sworn, says that he is —
14 the complainant- in the said action; that he has read the
foregoing bill of complaint and knows the contents thereof; that the same are true and of his own knowledge, except as to the matter- therein stated on information and belief, and as to those matters he verily believes them to be true.

FRANK H. FISHER.

Subscribed and sworn to before me this thirtieth day of April, 1880.

[SEAL.] CHAS. D. WHEAT,
Notary Public.

(Endorsed:) Filed 8 May, 1880. L. S. B. Sawyer, clerk, by J. F. O'Beirne, dep'y clerk.

15 *Answer.*

In the Circuit Court of the United States, Ninth Circuit, District of California.

Frank H. Fisher, Complainant,
vs.
Richard Hoskin *et al.*, Defendants.

Now come the above-named defendants and for answer to the bill of complaint herein filed admit that the original and reissued letters patent mentioned in said complaint were granted to the plaintiff at the time therein mentioned. Said defendants deny that they have either on, before, or since the 17th day of December, A. D. 1872, either at the places named in the complaint or elsewhere, either manufactured, used, or sold any hydraulic apparatus embracing any improvement or invention described in said letters patent and in any way secured to the complainant. Defendants deny that unless the complainant obtains the relief sought in this action that he will be subject to great and irreparable injury or any injury.

16 And, further answering, said defendants say that they are informed and believe and so state to be true that the said reissued letters patent granted to the complainant are null and void for the reason that he, Fisher, was not the original or first inventor of a material and substantial part of the thing patented; that the specifications of said patents describe a hydraulic machine containing two curved sections, a swivel joint, a nozzle, and vertical joint so constructed that the direction of the stream of water which passed through the machine could, by the operation of the joint, be changed both horizontally and vertically, and in the second claim of said reissued patent the said Fisher claimed that the said two curved sections connected by a horizontal swivel joint in combination with a nozzle connected by a semi-universal joint constructed and arranged substantially as set forth.

Defendants aver that the said Fisher was neither the first nor the original inventor of what is set forth in said second claim and that the same is a material and substantial part of the thing patented, but that, on the contrary, one Joseph M. Allenwood, a resident of Timbuctoo, in Yuba county, California, was the first and
17 original inventor thereof, and upon due application therefor he, Allenwood, duly obtained United States letters patent for the said invention, which last said letters patent bore date on the 12th day of July, 1864, were numbered 43468, were signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents.

The said last-mentioned letters patent fully described the improvement mentioned in the said second claim of said Fisher's patent, and many machines under said Allenwood's patent as therein and in said second claim of Fisher's patent were made by said Allenwood at Timbuctoo and Smartsville, in Yuba county, California, and also by the plaintiff herein, Frank H. Fisher, at Nevada City, Nevada county, California, and said machines were publicly and successfully used at said Smartsville by James O'Brien, R. S. Crary, George Bristin, and others in the Smartsville claims and Blue Gravel claims and in the Pittsburg claims. The said machines were also used at said Timbuctoo by Jack Warren and one McAllis; also in Nevada county, California, by the Enterprise Company; at Blue Gent by the Little York Company, and George H. Altsins at Little York; also by Edward Williams at You Bet; also by Moltman and one Marcellus at Nevada City.

18 That each and all said parties resided at the several places where they made or used said machines as above severally stated, and all said machines were made and used as above stated long before said Fisher made or claimed to have made his said alleged invention, and more than two years before he applied for his said letters patent.

That on the 13th day of December, A. D. 1871, the said Allenwood, by an instrument in writing duly executed, assigned his said patent and invention to the defendants, R. R. Craig and Joseph Craig, who, upon a surrender thereof, obtained from said United States Government, upon an amended specification, reissued letters patent, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents, for the same invention and improvements, and said R. R. Craig and Joseph Craig, defendants, are now the exclusive owners and holders thereof.

That the said alleged invention was also fully described in an application made in writing and filed in the United States Patent Office by Jenkin W. Richards, a resident of Michigan Bluffs, Placer county, California, on the 26th day of November, A. D. 1867, ever since which time the said application and description has been
19 upon and formed a part of the public records of the U. S. Patent Office at Washington, D. C.

Defendants further aver that two machines made as described in said application of Jenkin W. Richards and said second claim in said Fisher's reissued patent were made by said Richards as early as the year 1867, and were publicly and successfully used for several years, one of them being used at El Dorado cañon, Placer county, California, by William Smith and two men named Thompson, all of whom resided in said El Dorado cañon. The other of said machines was first used at Michigan Bluffs, Placer county, California, by —— ——, who resided at ——.

Defendants further aver that Quarties Price, a resident of Nevada City, Nevada county, California, also made and publicly used as early as the year A. D. 1865, at said Nevada City, a hydraulic machine as described in said second claim of the plaintiff's reissued patent.

Defendants further aver that the complainant herein, Frank H. Fisher, well knew of said machine made by said Allenwood, Richards, and Price long before he made or claimed to have made any invention whatever in hydraulic machines; that he, complainant, long before he made or claimed to have made any improve-
20 ment or invention in hydraulic machines, had been em-

ployed to make said Allenwood machines, and the said machine made by said Price had for several months been in front of a machine shop in which said Fisher was at work, and the said Fisher had repeatedly seen it and well knew its construction long before he made his alleged invention or applied for a patent, and he obtained the reissue of his said patent with the said second claim inserted therein for the express purpose and intent of defrauding the public, well knowing at the time that he was not the inventor of what was there described and claimed and that the same was a material and substantial part of the thing which he patented.

Defendants further say that in all of the hydraulic machines herein mentioned, including the plaintiff's, it is necessary to their successful operation in mines that a devise known as "radial plates" or "rifles" should be inserted in the pipe or nozzle in order to straighten the stream passing through it; otherwise the stream scatters and loses much of its effective power and force; that the defendants, R. R. Craig and Joseph Craig, have, ever since the eleventh day of April, A. D. 1870, been the owners of United States
21 letters patent granted on the eighth day of December, 1863,
to Seth Martin and Charles F. Macey, the inventors thereof, and their assigns, giving them for seventeen years from the last-named date the exclusive right to manufacture and use and sell to others to use the said radial plates or rifles in hydraulic machines, and said letters patent were by said Martin and Macey duly assigned to said defendants, R. R. Craig and Joseph Craig, on the said eleventh day of April, 1870.

That on or about the eight day of November, 1871, the said defendants, R. R. Craig and Joseph Craig, commenced suit against said Fisher in this hon. court by a bill in equity therein duly filed, and such proceedings were thereupon duly had that on the seventh day of January, A. D. 1873, a decree was entered in said suit adjudging said letters patent to Martin and Macey to be valid in all respects; that the said Fisher had infringed the same, and perpetually enjoining and restraining him from further making, using, or selling to others to use the said radial plates or rifles in hydraulic machines; that as a consequence thereof the complainant and his assigns can only use his machine as described in his said letters patent, without said radial plates or rifles, in which condi-
22 tion the said machine is practically worthless and cannot to
any considerable extent be either sold or sold; and for these reasons since the date of said decree the said Fisher has almost or quite ceased to manufacture or sell said machines, although the manufacture and sale thereof was his principal business prior to the time that he was enjoined in said suit from infringing the defendants', R. R. Craig and Joseph Craig, said letters patent granted to Macey and Martin as aforesaid.

And, further answering, these defendants say, and the same is true, that the reissued letters patent herein sued upon contain new matter not contained in the original patent, and which new matter describes and claims that of which the complainant was not the inventor.

That the said new matter describes a ball-and-socket joint formed by the discharge pipe E on the elbow B, and in the said last reissued patent a ball-and-socket joint is claimed in combination with other things; but defendants aver that the machines made by the said Fisher contained all of his invention, but did not contain any ball-and-socket joint; neither did it contain any discharge pipe
23 having any ball-shaped enlargement at its base, neither did it contain any ball-and-socket jointed sections. Defendants say that the said Fisher did not discover or invent or make any hydraulic machine, which machine or combination included either a ball-and-socket joint or ball-and-socket jointed sections or a discharge pipe having a ball-shaped enlargement at its base, and his said original patent did not contain any description of said devices or either of them and did not claim the said devices, either in any combination or otherwise.

Defendants aver that all that is said in the last said reissued letters patent about a ball-and-socket jointed section and ball-and-socket joints and a discharge pipe with a ball-shaped enlargement at its base is all new matter, *with* was not contained in the said original letters patent granted to said Fisher on the twentieth day of December, A. D. 1870, and was inserted in said last-reissued patent by the said Fisher fraudulently and for the sake of deceiving and misleading the public, he well knowing that the same was not his invention or any part thereof, and also knowing that it was
24 not contained in said original patent.

Defendants aver that by reason of said fraudulent insertion of said new matter the said last reissued letters patent are null and void.

Wherefore defendants ask to be dismissed hence with their costs.

WHEATON & SCRIVNER,
Solicitors for Def'ts.

STATE OF CALIFORNIA, }
City and County of San Francisco, } *ss:*

Richard Hoskin, being first duly sworn, on his oath says that he is one of the defendants in the above-entitled case; that he has read the foregoing answer and knows the contents thereof; that the same is true, except those which are therein stated on information and belief, and as — those matters he believes it to be true.

RICHARD HOSKIN.

Subscribed and sworn to before me this 10th day of July, A. D. 1880.

[SEAL.]

OSCAR T. SHUCK,
Notary Public.

Service of a copy admitted July 10, 1880.

J. L. BOONE,
Attorney for Compl'ts.

25 (Endorsed:) Filed 10 July, 1880. L. S. B. Sawyer, clerk, by J. F. O'Beirne, dep'ty cl'k.

26 *Replication.*

Circuit Court of the United States for the District of California, Ninth Judicial Circuit.

FRANK H. FISHER, Complainant,
vs.
RICHARD HOSKIN *et al.*, Defendants.

The replication of Frank H. Fisher, complainant, to the answer of Richard Hoskin *et al.*, defendant-.

This repliant, saving and reserving to himself, now and at all times hereafter, all and all manner of benefit and advantage of exception which may be had or taken to the manifold insufficiencies of the said answer, for replication thereunto saith that he will aver, maintain, and prove said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the defendant- is uncertain, untrue, and unsufficient to be replied unto by this repliant; that any other matter or thing whatsoever in the said answer contained material or effectual in the law to be replied unto and not herein and hereby well and sufficiently replied
27 unto, confessed and avoided, traversed or denied, is true.

All of which matters and things this repliant is now and will be ready to aver, maintain, and prove as this honorable court shall direct, and humbly prays as in and by his said bill he has already prayed.

JOHN L. BOONE,
Solicitor for Complainant.

(Endorsed:) Service of the within replication and receipt of a copy thereof admitted this 25th day of September, 1880. Wheaton & Scrivner, attorney- for defendant. Filed 25th day of Sept'r, A. D. 1880. L. S. B. Sawyer, clerk, by J. F. O'Beirne, deputy clerk.

28 *Memorandum of Costs and Disbursements.*

UNITED STATES OF AMERICA:

Circuit Court of the United States, Ninth Circuit, District of California.

FRANK H. FISHER *et al.*, Complainants,
vs.
RICHARD HOSKIN *et al.*, Defendants.

Disbursements:

Marshall's fees	$39 75
Clerk's fees	32 80
Witness' fees, Stockman, $2.00	
Hanscom	4 50
Examiner's fees, seven witnesses	17 50
Docket fee, solicitors	20 00
Taxed at	$114 55

L. S. B. SAWYER, *Clerk.*

UNITED STATES OF AMERICA, } ss:
District of California, City, and County of San Francisco, }

Jno. L. Boone, being duly sworn, deposes and says that he is solicitor for the complainants in the above-entitled cause, and 29 as such is better informed relative to the above costs and disbursements that the said complainants; that the items in the above memorandum contained are correct to the best of this deponent's knowledge and belief, and that the said disbursements have been necessarily incurred in the said cause.

JNO. L. BOONE.

Subscribed and sworn to before me this 11th day of March, A. D. 1882.

P. W. T. KNOX,
Commissioner of U. S. Circuit Court, &c., Notary Public.

To Messrs. Wheaton and Scrivner, solicitor- for defendants:

You will please take notice that on Tuesday, the 14th day of March, A. D. 1882, at the hour of 10 o'clock a. m., I will apply to the clerk of said court to have the within memorandum of costs and disbursements taxed pursuant to the rule of said court in such case made and provided.

JNO. L. BOONE,
Attorney for Complainants.

Witnesses examined: F. H. Fisher, J.W. Stockman, W. W. Hanscom, F. Tounholz, R. Hoskin, H. B. Angel, F. H. Fisher.

30 (Endorsed:) Filed this 11th day of March, A. D. 1882. L. S. B. Sawyer, clerk.

31 *Interlocutory Decree.*

In the United States Circuit Court, District of California, Ninth Circuit.

FRANK H. FISHER and JOSHUA HENDY, Complainants,
vs. } No. 2296.
RICHARD HOSKIN, J. H. HOSKIN, JOSEPH CRAIG, and R. R. CRAIG, Defendants.

At a stated term of the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, held at the court-room thereof in the city and county of San Francisco, on Monday, the 6th day of March, A. D. 1882.

Present: The Honorable Lorenzo Sawyer, circuit judge.

This cause having come on to be heard upon the bill of complaint herein, the answer of the defendants, the replication of the complainants, and the proofs, oral, documentary, and written, 32 taken and filed in said cause and having been argued by counsel for the respective parties and submitted to the court for consideration and decision:

Now, therefore, on consideration thereof, it is ordered, adjudged, and decreed, and the court doth hereby order and judge and decree, as follows, to wit:

That the reissued letters patent of the United States of America, numbered 8876, granted and issued to Frank H. Fisher, of San Francisco, California, one of the complainants in this suit, on the second day of September, A. D. 1879, are good and valid in law; that the said Frank H. Fisher was the first and original inventor of the improvements in hydraulic mining apparatus as described and claimed in said letters patent and in the specifications thereto annexed, and that said Frank H. Fisher and Joshua Hendy, the complainants in this suit, are the sole and exclusive owners of said letters patent.

That the defendants, Richard Hoskin, J. H. Hoskin, and Joseph Craig and R. R. Craig have infringed upon the second and third claims in said letters patent and upon the exclusive rights of the complainants under the same—that is to say, by making and
33 using and selling one or more hydraulic mining apparatus
containing the invention and improvements covered by the said second and third claims in said letters patent, as charged in the bill of complaint.

And it is further ordered, adjudged, and decreed that the complainants do recover of and from the defendants, Richard Hoskin, J. H. Hoskin, and Joseph Craig and R. R. Craig, the profits, gains, and advantages which the said defendants or either of them have received or made or which have arisen or accrued to them or either of them from the said infringement of said reissued letters patent No. 8876 by the making, using, and selling or the making, using, or selling said machines or apparatus as described in said letters patent, and also the damages which the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, Esq., the standing master in chancery of this court, residing in the city and county of San Francisco, district and State of California, to ascertain and take and state and report to this court an account of the number of hydraulic mining
34 machines made and used and sold or made or used or sold by
the defendants or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received or which have arisen or accrued to them or either of them since the second day of September, A. D. 1879, from infringing the said exclusive right of the said complainants by the making, using, and selling or the making, using, or selling of the apparatus described and claimed in said reissued letters patent No. 8876; also the damages which the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that the complainants, on such accounting, have the right to cause an examination of the defendants, Richard Hoskin, J. H. Hoskin, R. R. Craig, and Joseph Craig, and each of them and their and each of their agents, servants, or workmen or other witnesses as may be necessary to take said accounting, and also the production of the books, vouch ers, and documents of which said defendants, Richard Hoskin, J. H. Hoskin, R. R. Craig, and Joseph Craig, and their and each of their attorneys, servants, agents, and workmen, may be possessed, and to cause them to attend for such purposes before said 35 master from time to time as such master shall direct.

And it is further ordered, adjudged, and decreed that a perpetual injunction be issued in this case against the said defendants, Richard Hoskin, J. H. Hoskin, R. R. Craig, and Joseph Craig, and each of them and their and each of their servants, agents, clerks, and workmen and all persons claiming or holding under or through them — from making or using or selling or in any way disposing of hydraulic mining apparatus embracing the improvements and inventions set forth in the second and third claims of said reissued letters patent No. 8876 pursuant to the prayer of the bill of complaint.

LORENZO SAWYER,
U. S. Circuit Judge, Ninth Judicial Circuit.

(Endorsed:) Filed and entered March 17, 1882. L. S. B. Sawyer, clerk. (See order.) Eq. Dec. Reg., 2 J., 375.

36 At a stated term, to wit, the February term, A. D. 1882, of the circuit court of the United States of America, of the ninth judicial circuit in and for the District of California, held at the courtroom, in the city and county of San Francisco, on Monday, the 29th day of May, in the year of our Lord one thousand eight hundred and eighty-two.

Present: The Honorable Lorenzo Sawyer, circuit judge.

Order Granting Rehearing.

F. H. FISHER *vs.* RICHARD HOSKIN *et al.*

Ordered, That the rehearing of this cause be had upon the same testimony upon which this cause has already been heard before Mr. Justice Field and the judge of this court.

I hereby certify that the foregoing is a full, true, and correct copy of an orignal order entered in the above-entitled cause.

Attest my hand and the seal of said circuit court this 7th 37 day of March, A. D. 1884.

L. S. B. SAWYER, *Clerk,*
[SEAL.] By F. D. MONCTON, *Deputy Clerk.*

38 *Interlocutory Decree.*

In the United States Circuit Court, District of California, 9th Circuit.

FRANK H. FISHER and JOSHUA HENDY, Complainants,
vs.
RICHARD HOSKIN, JOSEPH H. HOSKIN, R. R. CRAIG, and JOSEPH CRAIG, Defendants.
} No. 2296.

At a stated term of the circuit court of the United States of America, of the ninth judicial circuit in and for the district of Cali fornia, held at the court-room thereof, in the city and county of San Francisco, on the 31st day of July, 1882.

Present: The Hon. Stephen J. Field, associate justice of the United States Supreme Court, and Hon. Lorenzo Sawyer, circuit judge.

This cause having been heard before his honor Lorenzo Sawyer, circuit judge, on Monday, the 6th day of March, 1882, and a decree having been rendered in favor of the complainants herein and subsequenty thereto, to wit, on the 24th day of April, 1882, a rehearing having been granted on the petition of the defendants, and 39 the case having been ordered to be reargued before his honor Stephen J. Field and his honor Lorenzo Sawyer, circuit judge, and again submitted for decision—

The said cause came on regularly to be heard on this — day of ——, 1882, upon the bill of complaint herein, the answer of the defendants, the replication of the complainants, and the proofs, oral, documentary, and written, taken and filed in said cause, and having been argued by counsel for the respective parties and submitted to the court for consideration and decision:

Now, therefore, in consideration thereof, it is ordered, adjudged, and decreed, and the court doth hereby order, adjudged, and decree, as follows, to wit:

That the reissued letters patent of the United States of America, numbered 8876, granted and reissued to Frank H. Fisher, of ——, one of the complainants in this suit, on the second day of September, A. D. 1879, are good and valid in law; that the said Frank H. Fisher was the first and original inventor of the improvements 40 in hydraulic mining apparatus as decribed and claimed in said letters patent and in the specifications thereto annexed, and that said Frank H. Fisher and Joshua Hendy, the complainants in this suit, are the sole and exclusive owners of said letters patent.

That the defendants, Richard Hoskin and Joseph H. Hoskin, R. R. Craig and Joseph Craig, have infringed upon the said letters patent and upon the exclusive rights of the complainants under the same—that is to say, by making and using and selling one or more hydraulic mining apparatus containing the invention and improvements set forth in the second and third claims of said letters patent, as charged in the bill of complaint herein.

And it is further ordered, adjudged, and decreed that the complainants do recover of and from the defendants, Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, the profits, gains, and advantages which the said defendants or either of them have received or made or which have arisen or accrued to them or either of them from the said infringement of said reissued letters patent No. 8876 by the making, using, and selling or the making, using, or selling of said machines or apparatus as described in said 41 letters patent, and also the damages which the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, Esq., the standing master in chancery of this court, residing in the city and county of San Francisco, district and State of California, to ascertain and take and state and report to this court and account of the number of hydraulic apparatus made and used and sold or made or used or sold by the defendants or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received or which have arisen or accurred to them or either of them since the second day of September, A. D. 1879, from infringing upon the said exclusive right of the said complainants by the making, using, and selling or the making or using or selling of the apparatus described and claimed in said reissued letters patent No. 8876; also the damages which the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that the complainants on such accounting have the right to cause an examination of the defendants, Richard Hoskin, Joseph H. Hoskin, R. R.
Craig, and Joseph Craig, and each of them and their and
42 each of their agents, servants, or workmen or other witnesses
as may be necessary to take said accounting, and also the production of the books, vouchers, and documents of which said defendants, Richard Hoskin, Joseph H. Hoskin, R. R. Craig, Joseph Craig, and their and each of their attorneys, servants, agents, and workmen may be possessed, — attend for such purposes before said master from time to time as such master shall direct.

And it is further ordered, adjudged, and decreed that a perpetual injunction be issued in this case against the said defendants, Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, and each of them and their and each of their agents, servants, clerks, and workmen and all persons claiming or holding under or through them — from making or using or selling or in any way disposing of hydraulic mining machines embracing the improvements and invention set forth in the said reissued letters patent No. 8876 and covered by the second and third claims therein contained pursuant to the prayer of the bill of complaint.

And it is further ordered, adjudged, and decreed that the complainants do recover from the defendants the costs and charges which
have been heretofore taxed in this action, together with all
43 additional costs and charges which have accrued since the
filing of the cost bill herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

(Endorsed:) Filed and entered September 4, 1882. L. S. B. Sawyer, clerk.

44 *Master's Report.*

In the Circuit Court of the United States for the Ninth Circuit and District of California.

FRANK H. FISHER *et al.*
vs. } 2296.
RICHARD HOSKIN *et al.*

In the matter of the reference for accounting.

To the honorable the circuit court of the ninth judicial circuit in and for the district of California:

In pursuance of the decretal order of this honorable court, filed and entered in the above-entitled cause on the 4th day of September, A. D. 1882, directing the undersigned, as master in chancery, "to ascertain and take and state and report to this court an account of the number of hydraulic apparatus made and used and sold or made or used or sold by the defendants or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received or which have arisen or accrued to them or either of them since the 2nd day of September, A. D. 1879, from infringing upon the exclusive rights of the complainants by the making, using, and selling or the making or using or selling of the apparatus described and claimed in complainants'
45 reissued letters patent number 8876, and also the damages
which the complainants have sustained thereby," I, the said master, having been attended at several times by the counsel for the respective parties, and having taken the testimony of the several witnesses produced in this behalf, and having examined the said testimony and the other evidence submitted, do make the
46 following report:

The history of hydraulic mining appliances differs in no essential particulars from the ordinary history of the progress of invention in many other departments of the mechanical arts. For the purpose of washing down banks of earth or gravel, in order to secure the gold which they contained, machines by means of which powerful streams of water could be utilized were necessary, and it was desirable that such machines could be readily moved from place to place, and that when once placed in position they could be so manipulated that the stream could with ease and safety be directed against any desired portion of the bank. For obtaining these objects various devices of greater or less efficiency were from time to time introduced, commencing with the primitive fire hose and culminating in the double-jointed machine of the complainant Fisher—a machine which was unquestionably a great improvement over the best hydraulic mining machines which had preceded it; a machine by means of which the practicability of using large streams of water under heavy pressures was greatly increased. The chief features of the Fisher invention covered by the second and third claims of his patent have been embodied and used to the greatest advantage in the infringing "Little Giant" machine by the respondents Hoskin.

47 The manner in which the said respondents have conducted
their hydraulic mining machine industry furnishes most convincing evidence of the superiority of the complainants' patented improvement. Prior to the 24th day of October, 1871, Richard Hoskin and the Craigs had for some years been engaged in the business of manufacturing and selling machines of this character. Upon that date a contract was entered into between them, the practical result of which has been to give to respondents Hoskin the monoply of that business during all the time since the date of Fisher's infringed reissued patent. Although the experience of said respondents had made them acquainted with and they had the right to make and sell machines the best adapted to perform the required work, with the exception of a machine embracing the complainants' improvement, they have, during the whole period of their monoply, until recently restrained by this court, made no other machines than the Little Giant machine referred to, which owes much of its value to the Fisher invention. The adoption of that invention would seem, therefore, to have demonstrated that its use was necessary to adapt the infringing machine to the purpose required, and by reason of their use of that invention the infringers have been enabled to produce a superior machine, which met the require-
ments of the hydraulic miners and completely controlled the
48 market, and they have left open to the miners no other way
of supplying their needs in this direction; and in a recent decision (Manufacturing Co. *vs.* Cowing, 15 Otto, 225) it has been laid down by the Supreme Court that "if the complainants' improvement is required to adapt the infringing machine to a particular use, and there is no other way open to the public of supplying the demand for that use, then it is clear the infringer has by his infringement secured the advantage of a market he would not otherwise have had, and that the fruits of this advantage are the entire profits he has made in that market."

But the monopoly of respondents Hoskin, as well as the efficiency of their infringing machine, are not to be altogether attributed to their adoption of the Fisher improvement, but have been in great part owing to their having the right to use and using a device called the Macy and Martin rifles secured to said respondents by the Craig-Hoskin contract referred to. It is true that the Fisher double-jointed machine was much superior to any hydraulic mining machine theretofore introduced, but in order to attain the best results the use of the rifles was necessary. It therefore becomes necessary in estimating the amount of respondents' profits which are due to the infringement to determine the relative values of the
rifles and of complainants' patented features in the Little
49 Giant machine. The claim of respondents that the value of
their infringing machine has been materially augmented by the incorporation into it of improvements covered by the Hoskin pipe-coupling patent does not seem to be well grounded. The

essential elements which go to make up the success of the Little Giant machine are evidently the Fisher invention and the rifles. "The value of the infringing machine as a marketable article is properly and legally attributable to the patented features" of complainant- used in connection with the rifles. If any additional advantage is gained by the use of features covered by Rice's patent the value of that advantage is established by the contract referred to.

The view here taken is that the value in the infringing machine of the rifles is fixed by the Craig-Hoskin contract. At the time that the contract was entered into the Craigs were established in the business of making and selling hydraulic mining machines, and were in a position to understand and to exact from Hoskin the full value of the right to use the rifles. A value was placed upon the rifle patent and agreed upon by the parties. If the value of the rifles in the Little Giant machine was greater than the value fixed by the contract that fact is not shown by the evidence, and it is doubtful whether in any matter of this character the value of one of several patented elements in a machine could be determined upon a basis of greater exactness than that here taken.

50 Under the circumstances, then, the value of the Fisher invention in the infringing Little Giant machine is the net profit made by respondents Hoskin since the date of Fisher's reissued patent, less the amount paid by them to the Craigs under the contract. It may be contended that that amount was paid as consideration not only for the right to use the rifles, but also for the right to use other patented features which contributed nothing to the efficiency of the Little Giant machine; but whether it be considered as having been in part paid for such valueless features or as consideration for securing to the Hoskins a monopoly of the business or as royalty for the use of the rifles alone, the amount paid to the Craigs under the contract included the royalty upon the rifles, and it was an expense incidental to the business of respondents Hoskins, and as such should be deducted from their profits in this accounting.

In addition to profits complainants claim, as damages for the unlawful use of their patented improvement by respondents, the sum of two thousand dollars, estimated to be the amount of complainants' expenditures in connection with this litigation, and the further sum of fifty thousand dollars as damages suffered by reason of "the depression by defendants of the selling price of the machines;" but no rule of patent law is better established than that

51 "expenses of suit are never allowed in assessing damages."

It is fair to presume that the respondents sold their machines at such prices as would bring them in the greatest profit, and there is no sufficient evidence to rebut this presumption. It is apparent, also, that both of the amounts specified are purely speculative estimates resting upon no substantial basis of reason or of law, whereas "actual damages must be actually proved and cannot be assumed as a legal inference from any facts which amount not to actual proof of the fact." No damages over and above profits can therefore be allowed.

The complainants further claim profits of respondents arising from repairing machines. A patentee is entitled to damages from an infringer. The measure of those damages, when determined, is practically a royalty for the use of the patented invention, and a purchaser from an infringing manufacturer has as much right to use the machine of an infringer upon which that royalty has been paid as he would have to use a machine made and sold by the patentee, and a claim for profits derived from repairing such infringing machine could no more be sustained than a claim for profits derived from repairing the machine of the patentee himself. The claim for profits on repairs is not allowed.

52 Whatever profits have been made by respondents Craig have arisen from the assignment to Hoskins by them of patents which they owned, and complainants can have no interest in such profits.

The conclusions reached in this matter may be briefly stated thus: By making and putting upon the market no machines except such as embraced the Fisher invention when they had a complete monopoly of the business and had the right to make and sell the best-known hydraulic mining machines not embracing that invention, respondents Hoskin settled the proposition that only machine- containing the Fisher improvement were marketable, and the value of that improvement is the value of the entire infringing machines, less the value of the features covered by another patent, which latter value is fixed by the Craig-Hoskin contract.

Adopting this view, it becomes unnecessary to advert to several propositions ably and elaborately presented by counsel in their oral arguments and in their briefs.

Respondents' net profits upon 355 infringing machines (the number made and sold up to date of accounting) are		$26,665 33
Deduct bad debt	$125 00	
Deduct amount paid the Craigs	10,075 00	
		10,200 00
Leaving as a balance		$16,465 33

53 I have, therefore, ascertained and do report that "the number of hydraulic apparatus made and sold by the defendants" since the second day of September, 1879, the date of Fisher's reissued letters patent, is three hundred and fifty-five, & that "the gains, profits, and advantages which the said defendants have received or which have arisen or accrued to them since the date last aforesaid from infringing upon the exclusive rights of the complainants by the making and selling" of the infringing machines referred to amounted to sixteen thousand four hundred and sixty-five $\frac{33}{100}$ dollars, and that no damages sustained by complainants, in addition to respondents' said profits, are due to said complainants, as no proper basis for the assessment of such damages has been proved or submitted.

Respectfully submitted,

S. C. HOUGHTON,
Master, &c.

May 17, 1883.

54 *Interlocutory Decree.*

In the United States Circuit Court, District of California, 9th Circuit.

FRANK H. FISHER and JOSHUA HENDY, Complainants,
vs.
RICHARD HOSKIN, R. R. CRAIG, and JOSEPH CRAIG, Defendants.
No. 2296.

At a stated term of the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, held at the court-room thereof, in the city and county of San Francisco, on the 31st day of July, 1882—present, the Hon. Stephen J. Field, associate justice of the Supreme Court, and Hon. Lorenzo Sawyer, circuit judge—this cause having been heard before his honor Lorenzo Sawyer, circuit judge, on Monday, the 6th day of March, 1882, and a decree having been rendered in favor of the complainants herein, and subsequently thereto, to wit, on the 24th day of April, 1882, a rehearing having been granted on the
55 petition of the defendants and the case having been ordered
to be reargued before his honor Stephen J. Field and his honor Lorenzo Sawyer, circuit judge, and again submitted for decision, the said cause came on regularly to be heard on this — day of ——, 1882, upon the bill of complaint herein, the answer of the defendants, the replications of the complainants, and the proofs, oral, documentary, and written, taken and filed in said cause, and having been argued by counsel for the respective parties and submitted to the court for consideration and decision:

Now, therefore. in consideration thereof, it is ordered, adjudged, and decreed, and the court doth hereby order, adjudge, and decree, as follows, to wit:

That the reissued letters patent of the United States of America, numbered 8876, granted and issued to Frank H. Fisher, of ——, one of the complainants in this suit, on the second day of September, A. D. 1879, are good and valid in law.

That the said Frank H. Fisher was the first and original inventor of the improvements in hydraulic mining apparatus as described and claimed in said letters patent and the specifications thereto annexed, and that said Frank H. Fisher and Joshua Hendy, the complainants in this suit, are the sole and exclusive owners of said letters patent.

That the defendants, Richard Hoskin, R. R. Craig, and Joseph Craig, have infringed upon the said letters patent and upon
56 the exclusive rights of the complainants under the same—
that is to say, by making and using and selling one or more hydraulic mining apparatus containing the inventions and improvements set forth in the second and third claims of said letters patent, as charged in the bill of complaint herein.

And it is further ordered, adjudged, and decreed that the complainants do recover of and from the defendants, Richard Hoskin, R. R. Craig, and Joseph Craig, the profits, gains, and advantages which the said defendants or either of them have received or made or which have arisen or accrued to them or either of them from the said infringement of said reissued letters patent No. 8876 by the making, using, and selling or the making, using, or selling of said machines or apparatus as described in said letters patent, and also the damages which the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, Esq., the standing master in chancery of this court, residing in the city and county of San Francisco, district and State of California, to ascertain and take & state and report to this court an account of the number of hydraulic apparatus made and used and sold or made or used or sold by the defendants or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received or which have arisen or accrued to them or either of them since the second day of September, A. D. 1879, from infringing upon the said exclusive right of the said complainants by the making, using, and selling or the making or using or selling of the apparatus described and claimed in said reissued letters patent No. 8876, and also the damages which

57 the complainants have sustained thereby.

And it is further ordered, adjudged, and decreed that the complainants, on such accounting, have the right to cause an examination of the defendants, Richard Hoskin, R. R. Craig, and Joseph Craig, and each of them & their and each of their agents, servants, or workmen or other *other* witnesses as may be necessary to take said accounting, and also the production of the books, vouchers, and documents of which said defendants, Richard Hoskin, R. R. Craig, and Joseph Craig, and their and each of their attorneys, servants, agents, and workmen may be possessed, — attend for such purposes before said master from time to time as such master shall direct.

And it is further ordered, adjudged, and decreed that a perpetual injunction be issued in this case against the said defendants, Richard Hoskin, R. R. Craig, and Joseph Craig, and each of them and their and each of their agents, servants, clerks, and workmen and all persons claiming or holding under or through them, from making or using or selling or in any way disposing of hydraulic mining machines embracing the invention and improvements set forth in said reissued letters patent No. 8876 and covered by the second and third claims therein contained, pursuant to the prayer of the bill of complaint.

And it is further ordered, adjudged, and decreed that the complainants do recover from the defendants the costs and charges which have heretofore been taxed in this action, together with all additional costs and charges which have accrued since the filing of the cost bill herein.

58 (Signed) LORENZO SAWYER,
Circuit Judge.

(Endorsed:) Filed and entered September 4, 1882. L. S. B. Sawyer, clerk.

I, Lorenzo S. B. Sawyer, clerk of the circuit court of the United States for the district of California, do hereby certify the foregoing to be a full, true, and correct copy of the original interlocutory decree filed September 4, 1882, in the therein-entitled cause.

Attest my hand and seal of said circuit court this 1st day of November, A. D. 1882.

[SEAL.] L. S. B. SAWYER, *Clerk*,
By —— ——, *Deputy Clerk*.

59 *Testimony of Richard Hoskin.*

In the Circuit Court of the United States, Ninth Circuit, District of California.

FRANK H. FISHER *et al.* *vs.* RICHARD HOSKIN *et al.*

In the matter of the reference to master for accounting.

SATURDAY, *October* 21, 1882.

Present: Mr. Boone, solicitor for complainants.

Examination of RICHARD HOSKIN, sworn on behalf of complainants, by Mr. BOONE:

Ques. 1. You are one of the defendants in this case, Mr. Hoskin?
Ans. I am, sir.

Ques. 2. Proprietor of the foundry at Marysville?
Ans. I am one of them.

Ques. 3. What is the name of the foundry?
60 Ans. Empire foundry, of Marysville.

Ques. 4. It is known commonly as the Marysville foundry, is it not?
Ans. No; there is a Marysville foundry and an Empire foundry; mine is the Empire.

Ques. 5. You have been manufacturing these Little Giant machines, have you, right along up to date?
Ans. I have, sir.

Ques. 6. Still manufacturing them, are you?
Ans. Still manufacturing, sir.

Ques. 7. You have your books here with you, have you?
Ans. I have.

Ques. 8. Are those books compiled showing the entire number of machines made and sold by you since September 2nd, 1879?
Ans. They are, to the best of my knowledge and belief; my book-keeper keeps the books, and, so far as I know, they are correct.

Ques. 9. You oversee the keeping of the books, don't you?
61 Ans. No, sir; I don't look at the books once in six months; I have got my department to attend to.

Ques. 10. You are proprietor of the house, are you not?
Ans. Yes, sir.

Ques. 11. Do you mean to say that you have no supervision over the accounts and books?
Ans. My brother generally supervises and sees to those things, but my book-keeper is correct and don't require supervision.

Ques. 12. Where is your brother?

Ans. He is in the mountains.

Ques. 13. When did he go?

Ans. I think he went the day before I left; he went the same day that I received notice from Mr. Wheaton to come down here; he had a case in court in Auburn and went there.

Ques. 14. He went under summons from the court, then?

Ans. No, sir; he was one of the parties in the suit there; he had notice from his attorney to be there.

62 Ques. 15. Who is his attorney?

Ans. I think Judge Spear is his attorney.

Ques. 16. What is the title of the case?

Ans. The case is, I think, on the settlement of the estate of Moody, of Gold Run, on a foreclosure of mortgage.

Ques. 17. The suit is at Gold Run, is it?

Ans. At Auburn. I think that is the case.

Ques. 18. What interest has your brother in that suit?

Ans. I don't know that he has any interest particularly. I have footed all—paid all expenses, and I have shouldered all responsibility heretofore.

Ques. 19. What do you mean by saying that you footed all the expenses?

Ans. That is, I have not charged *that* any expenses that I have been at to my brother.

Ques. 20. In what?

Ans. In this suit.

63 Ques. 21. I am talking about the Moody case. What interest has your brother in the Moody case?

Ans. He has commenced suit against the administrator of the estate to foreclose a mortgage.

Ques. 22. That suit is coming up, you say?

Ans. That suit was to come up to-day. He left home Thursday last.

Ques. 23. To go to Gold Run?

Ans. To go to Auburn. The case comes up either to-day or yesterday. I think the case came up yesterday.

Ques. 24. Who keeps your books?

Ans. His name is George Gates.

Ques. 25. Where is he?

Ans. He is in Marysville; but the account has been kept by other book-keepers away back for years. This account goes back to 1873 in the books.

Ques. 26. I am only speaking of the accounts since September, 1879.

64 Ans. You know Joseph Craig was interested. Every Giant that was sold was entered in a Giant ledger until the expiration of the Allenwood patent. Craig would come up now and then and he had access to the books and gave them a thorough examination and he was satisfied with the account. On each and every Giant sold I had to pay him a royalty on the Allenwood patent, and hence each Giant sold was entered on the Giant ledger and it was

kept distinct from the general account until after the expiration of the Allenwood patent, and then it went into the general account in the blotter. I brought the blotter along. The reason why the Giant account was entered separate was this: that I was responsible to the foundry; if I lost on that account it was a loss of mine and not of my brother's. The Giant business was a separate and distinct business and I was responsible for every Giant that was manufactured.

Ques. 27. Then your brother had nothing at all to do with the Giants?

Ans. My brother had nothing at all to do with the Giants until after the expiration of the Allenwood patent; nothing more to do with the profits derived from the Giants any more than with the profits of any ordinary casting for Tom, Dick, or Harry. The Giant business was mine, and I was responsible to him for his share of everything that was lost on Giant accounts.

Ques. 28. You say you never supervised the accounts at all?

65 Ans. I carefully looked over the books to see what Giants had gone out, who they were sent to, and when orders came in for Giants. I see the orders, take a look to see who they are to go to, and so on. Craig would come up and he would look at the book and have his account made up and go to the books and compare his account and the books. Sometimes he didn't take the trouble to do it, because he never found an error; never found an error in all the dealings we had. Here is the Giant ledger; that goes back to 1873; from 1873 to 1881. This ledger shows each machine sent out, where sent, and the size.

Ques. 29. How many sizes of the Little Giant machine did you make?

Ans. In all, I suppose, you might say seven.

Ques. 30. How were they distinguished?

Ans. By the sizes of the inlet and the outlet. There has been some change in that respect, but the prices were not changed on account of the change made in the size.

Ques. 31. How many different sizes of machines did you make in which the prices did differ?

Ans. I think seven.

Ques. 32. The prices differed in each of those seven sizes?

66 Ans. Yes, sir.

Ques. 33. How were they called?

Ans. Consecutive numbers.

Ques. 34. 1, 2, 3, 4, 5, 6, and 7?

Ans. Yes, sir.

Ques. 35. What was the price of your number 1?

Ans. That we sold at one hundred and twenty-five dollars.

Ques. 36. That was the price of Little Giant, number 1, from September, 1879, up to the present time, was it?

Ans. Up to the expiration of the Macy and Martin rifle patent.

Ques. 37. When was that?

Ans. I would have to refresh my memory about the date of the expiration of that patent.

Ques. 38. Was the price changed after the date of the expiration of that rifle patent?

67 Ans. Yes, sir.

Ques. 39. Can you tell at what time the price was changed?

Ans. I think December, 1880?

Ques. 40. Give us the date of the last charge in your books at the original price and of the first charge at the new price.

Ans. The first charge that I find at the reduced price is January 5, 1881. I think that the rifle patent expired some time in December, 1880.

(In order to enable the witness and complainants' solicitors to go over the accounts and make up a statement as the basis for the accounting, the hearing is continued until Monday, 23rd instant, at two o'clock p. m.)

68 MONDAY, *October* 23, 1882.

Present: Mr. Boone, solicitor for complainants.

Continued further, by consent, until to-morrow, 24th instant, at 2 o'clock p. m.

TUESDAY, *October* 24, 1882.

Present: Mr. Boone, solicitor for complainants; Mr. Hoskin, respondent.

Further continued, by consent, until to-morrow, 25th instant, at two o'clock.

WEDNESDAY, *October* 25, 1882.

None of the parties or counsel, with exception of complainant Fisher appearing, the hearing was not resumed.

On Monday, 30 October, respondent, Richard Hoskin, appeared before the master and notice was given to him and to complainants' solicitor that the hearing would be resumed the next day, Tuesday, 31 October, 1882, at one o'clock p. m.

TUESDAY, *October* 31, 1882.

Present: Mr. Boone, solicitor for complainants.

Mr. Hoskin not appearing, a further continuance is granted

69 until Friday, November 3, at two o'clock p. m.

FRIDAY, *November* 3, 1882.

Present: Mr. Boone, solicitor for complainants; Mr. Harpham, of counsel for respondents.

Examination-in-chief of RICHARD HOSKIN continued.

By Mr. BOONE:

Ques. 41. Mr. Hoskin, have you, since your last examination, made an examination of your books and ascertained the number of Little Giant machines made and sold by you since the second day of September, 1879?

Ans. I have.

Ques. 42. What is the number?

Ans. As near as I can discover, three hundred and thirty-one.

Ques. 43. State the number of machines of each size, made by you, making up said number 331?

70 Ans. 129 number 1; 91 number 2; 34 number 3; 36 number 4; 18 number 5; 13 number 6; 8 number 7; 2 number 8.

Ques. 44. What was the cost price of manufacturing these machines?

Ans. Number 1, $31.75, as near as I can tell; number 2, $47.73; number 3, $66.21; number 4, $76.25; number 5, $88.25; number 6, $95.00; number 7, $120.00; number 8, $180.00.

Ques. 45. Please state the selling price of a number 1 machine.

Ans. I cannot give you any definite price, for the reason that we sold at different prices, according to circumstances under which we sold. In the list of machines sold I have accounted for all sold and the prices at which they were sold, so that it will be an easy matter to take the average, although I have not done so.

Ques. 46. What was the total amount received by you from the sale of these machines?

71 Ans. For the 129 number 1 machines, $12,009.99; for the 91 number 2 machines, $11,633.52; for the 34 number 3 machines, $5,419.45; for the 36 number 4 machines, $7,086.75; for the 18 number 5 machines, $4,367.50; for the 13 number 6 machines, $3,467.20; for the 8 number 7 machines, $2,498.80; for the 2 number 8 machines, $741.20.

Ques. 47. Have you calculated the profits which you made on the repairs of Little Giant machines and on the sale of extra nozzles and butts?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. Yes, sir.

Ques. 48. What was it?

Ans. About one thousand dollars.

Ques. 49. Are there any other advantages which you have gained by being the manufacturer of the Little Giant hydraulic machines?

Ans. Not that I know of.

Ques. 50. Were you the manufacturer or agent of any other
72 machine or device which was used in connection with the Little Giant machines?

Ans. Yes, sir; a device known as a deflector, used with hydraulic machines, a patented device.

Ques 51. How did you advertise those deflectors?

Ans. They were to be used with hydraulic machines.

Ques. 52. Advertised them in connection with the hydraulic machines?

Ans. To facilitate the working of hydraulic machines of all descriptions, of course.

Ques. 53. You advertised it, then, in connection with the hydraulic machines, did you, in the same advertisement?

(Objected to by respondent- as immaterial and irrelevant.)

Ans. O, yes; they were in the same advertisement.

Ques. 54. When parties called to examine the Little Giant machines and to purchase them, did you not show and explain the deflector to them?

(Objected to by respondent- as immaterial and irrelevant.)

73 Ans. O, I might have done so. I didn't make a practice of doing so. They are very well known. In fact, I should say it was very seldom the parties called. Their orders were by letter, I suppose, ninety-five per cent.

Ques. 55. Then, in your opinion, the fact that you were the manufacturer and seller of the Little Giant machine was of no advantage to you in the sale of the deflectors?

(Objected to by respondent- as immaterial and irrelevant.)

Ans. No. I invented the deflector. If there had been no Little Giant I might possibly have invented the deflector, and if there were no Little Giants used there would have been other machines sold, and I would have sold the deflectors.

Ques. 56. What other machines were the deflectors used on?

Ans. I say they might have been used on other machines. I could have made one jointed machines, on which the deflectors could be used.

Ques. 57. I ask you whether, as a matter of fact, your being the manufacturer and seller of the Little Giant machines made it any advantage to you in the sale of deflectors?

Ans. No; I think that parties would have used deflectors whether I sold Little Giants or not. They have been regarded as
74 necessary for any and every machine that might be used.

Ques. 58. Then you consider if you had not manufactured any hydraulic machines, but had simply been the manufacturer of the deflector, you would have had every advantage that you did have, being the manufacturer of the Little Giant machine?

Ans. Certainly; I would have sold just as many deflectors, because a deflector would have been a necessity, and more so, because the Giant was the easiest machine to work, and any other machine which could be brought up would require a deflector more than the Giant would, and I might have sold more deflectors; for instance, the objection to the Craig machine was its exceeding difficulty of working; the deflector would have obviated all that.

Ques. 59. Do the figures which you have given us as the cost price of the machines include the rifles?

Ans. No, sir.

Ques. 60. Then you have deducted the cost of the rifles from the cost of the machines as you went along?

Ans. Yes, sir; the machines actually cost me, besides what I paid for license to use the rifle, without which the machine would be worthless and I never could have sold any machines; the
75 rifle was just as much an expense to me as the iron or the materials of which the machine was composed.

(Mr. Boone moves to strike out the answer after the words "yes, sir," as not responsive to the question and as immaterial.)

Ques. 61. What means were used for handling the Little Giant machine before the deflector was invented?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. By manual power.

Ques. 62. How was the manual power applied?

Ans. By taking hold of the discharge pipe; and many years ago, long before the reissue of this Fisher patent, I had a lever. I used a lever many years ago; I haven't made any for several years, as I know of.

Ques. 63. Was not the lever superseded by the deflector?

Ans. O, the lever was discarded; I quit making levers before the deflector was introduced.

Ques. 64. How long before?

Ans. I don't know.

Ques. 65. A month or ten days?

76 Ans. Very few of the Giants made—not five per cent.—ever had levers; not three per cent.

Ques. 66. How long was it before the deflector was invented that you quit making levers?

Ans. I could not say.

Ques. 67. Is it not a fact that you applied levers, more or less, up to the time that you invented the deflector?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. I might have done so, but it was not for the reason that they could not work the Giant without the lever; and some persons preferred to stand behind the machine & some preferred to stand in front; those who preferred to stand behind the machine had it, and those who preferred to stand in front didn't have it.

Ques. 68. Since the invention of the deflector you have not applied levers, have you?

Ans. I don't think I have; I may have made one or two; I don't recollect.

Ques. 69. What proportion of the machines now in use use the deflector?

77 (Objected to by respondent- as irrelevant and immaterial.)

Ans. I don't think one-fourth—I don't think one-tenth.

Ques. 70. A great many persons prefer to handle the machines by manual power, do they not?

Ans. They handle them still by manual power.

Ques. 71. If before the invention of the deflector the levers were applied to a certain extent and since the invention of the deflector no levers have been used and the deflector has been used to the same extent, how do you make it out that the deflectors have not taken the place of the levers?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. The levers were only applied to a very small fraction of the machines sold.

Ques. 72. And you say that the deflector is only applied to a very small fraction of the machines sold?

Ans. Precisely.

Ques. 73. And no levers have been applied since the deflector was
invented. Now, why is it that the deflectors have not taken
78 the place of the levers?

Ans. I sell deflectors with the number 1, 2, and 3 machines. I don't think I ever sold a lever with a number 1, 2, or 3 machine, only with the larger-sized machines.

Ques. 74. That is not an answer to my question.

(Question 71 repeated.)

(The same objection by respondent.)

Ans. I don't know that the deflectors have taken the place of the levers, because the deflectors are used on machines of a size that the levers were never used with, and it was very seldom that I sold a lever with a machine at any time; it was only now and then, and it was not because they could not use the machine without a lever, but because from their peculiar circumstances they preferred to stand behind the machine in manipulating it instead of in front of it, and now if a person is so situated that he prefers standing behind the machine instead of in front he would use a lever instead of a deflector. It is mere matter of choice whether they stand behind or in front of a machine to work it.

Ques 75. Then, according to your opinion, a person who ever used a lever or who preferred to use the lever would use the deflector?

Ans. Some persons don't use the deflector; they prefer the
79 lever now.

Ques. 76. Those same persons who would use the lever would not use the deflector—that is, as you mean to be understood, is it?

Ans. No, sir; they wouldn't use a deflector; they use a lever in preference if they prefer to stand behind the machine.

Ques. 77. Can you give us the number of deflectors that you have sold since September 2nd, 1879?

(Objected to by respondent- as irrelevant and immaterial; not called for by the order of reference.)

Ans. No; I am not prepared to.

Ques. 78. Can't the deflector be operated from the rear of the machine?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. I have never seen it done. I attempted to do it once and met with a very serious accident in consequence.

Ques. 79. What was the accident?

Ans. Knocked a dozen men over and laid them out.

Ques. 80. What did—the deflector or the machine?

80 Ans. The appliance for moving the deflector got out of order, and a serious accident occurred. I never made the attempt since.

Ques. 81. What made it get out of order?

Ans. It broke.

Ques. 82. The deflector is handled by a lever, is it not?

Ans. Yes, sir.

Ques. 83. Could that lever not be made long enough to reach to the rear of the machine?

(Objected to by respondent- as irrelevant and immaterial.)

Ans. Certainly; you could make it as long as you pleased.

Ques. 84. Could it not, then, be handled the same as the ordinary lever—from behind the machine?

Ans. No; not readily.

Ques. 85. Tell us why.

(The same objection by respondent-.)

81 Ans. With the ordinary lever the operator can let go and the pipe remains—it stands; but you make the lever of the deflector long enough to reach the back part of the machine, and it would be so heavy that the weight of the lever alone, if madestrong enough to operate the machine, would turn the deflector, and the operator could not let go his hold at any time without securing it. Another thing: With the lever in front, the machine follows the motion of the operator's hand, and, with the lever on the deflector of the machine, reaching behind it, it would be very inconvenient to operate, because when the pipe would turn to the right the hand would have to shuffle round to the left. It would be inconvenient to operate.

Ques. 86. Still it could be applied, could it not?

Ans. It could be applied, but it would not be used; no miner would use it in that condition—so constructed.

Ques. 87. What are the papers now shown you?

Ans. That is a statement of the account, of the number of machines sold, the prices at which they were sold, and the page of the book that the account is copied from.

Ques. 88. What books are they taken from?

Ans. They were taken from my books.

82 Ques. 89. By whom?

Ans. By me.

(The papers referred to, being two sheets of legal cap, containing the statement referred to in the answer to Ques. 87, are put in evidence by complainant- and marked, respectively, "Complainants' Exhibits A and B.")

(At the request of Mr. Harpham, of counsel for respondent-, the cross-examination of this witness is continued until the return of Mr. Wheaton, solicitor for complainant-, now absent from the State.)

Continued until Monday, 6th instant, at ten o'clock a. m.

Monday, *November* 6, 1882.

Present: Mr. Boone, solicitor for complainant-; Mr. Harpham, of counsel for respondent.

Examination of Richard Hoskin (continued).

By Mr. Boone:

Ques. 90. What was your connection with the defendant Craig?

83 Ans. Defendant Craig owned a patent right without which these machines were all useless.

(Complainant- moves to strike out the answer as not responsive to the question.)

Ques. 91. What was your business connection with defendants Craig in connection with the manufacture and sale of the Little Giant machine?

Ans. Mr. Craig received a royalty up to a certain date for the use of a patent used in the machine.

Ques. 92. Had you a contract with Mr. Craig in relation to that?

Ans. Up to a certain date.

Ques. 93. Where is that contract?

Ans. It is at home.

Ques. 94. Will you produce it?

Ans. I can. I haven't got it here.

Ques. 95. Will you produce it?

Ans. I will produce it, sir. I have got to telegraph for it. I can give you the substance of it if you wish.

84 (See page —, line —, *et seq.*)

Tuesday, *November* 28, 1882.

Present: Mr. Boone, solicitor for complainants; Mr. Wheaton, solicitor for respondent-.

Testimony of James H. Bradley.

Examination-in-chief of James H. Bradley on behalf of respondents by Mr. Wheaton:

Ques. 1. Please state your name, age, place of residence, and occupation.

Ans. My name is James H. Bradley; my age, fifty-two years; I live in Placerville, El Dorado county, and I am a miner.

Ques. 2. How long have you been a miner?

Ans. I have been working at it since 1850. I came here in 1849.

Ques. 3. How many different hydraulic mining machines have you used for actual working?

Mr. Boone: What is the object of this testimony?

85 Mr. Wheaton: To show that the Fisher machine is not as good as other hydraulic machines, which the respondents had a perfect right to manufacture and sell.

(Objected to by complainant- as irrelevant and immaterial, that the value of the Fisher machine is not involved in this accounting.)

Ans. I couldn't tell exactly how many; I have used a number of those different machines.

Ques. 4. Please give the names of the different hydraulic machines that you have used, so far as you now recall them.

Ans. The first machine that I used was the old-fashioned Globe machine, as we called it, and I have used what we called the Hoskin machine and the Little Giant; those three different machines. I know that I have used three or four different machines.

Ques. 5. Did you ever use the Fisher machine?

Ans. Yes; I think I have—one that had a Fisher name on it.

Ques. 6. Where did you use the Fisher machine?

Ans. In what is called the Boston Hydraulic Mining Company's property in Calaveras county.

Ques. 7. Was that a two-jointed machine?

86 Ans. Yes; I think it was.

Ques. 8. Do you recollect whether or not it had levers for turning it?

Ans. We didn't use a lever on that; we used a deflector and done away with the lever. It was low banks that were worked there.

Ques. 9. How long ago was that?

Ans. That was four years ago this fall, if I recollect right.

Ques. 10. What kind of a machine was the Hoskin machine which you say you used?

Ans. That was a one-jointed machine; there was only one joint to it. We used two of those there.

Ques. 11. Of the different machines which you have used which were the best?

Ans. I find but very little difference in them.

Ques. 12. How long have you known those Hoskin single-jointed machines to be used?

Ans. I can't recollect exactly when I first saw them. It must have been in 1868 or 1869 when I first saw them. My recollection
87 is it was from 1868 to 1870 when I first noticed them—used them.

Ques. 13. What advantages, if any, were there in the two-jointed machines which you used over the single-jointed Hoskin machines which you used?

Ans. As far as I was concerned, I never see any advantage. We had a discussion up at Whiskey Hill there. We were working four different machines.

Ques. 14. Which of those four machines threw the best stream, if either?

Ans. I never could see much difference. I thought that the single-jointed machine threw as good a stream as the other, because there was no ring bolt, as we call it, through the second joint to stop the water. I set the four of them together and tried them, but never see but little difference.

Ques. 15. How many of those machines which you used at Whiskey Hill were two-jointed machines?

Ans. There was two single-jointed and two two-jointed machines.

Ques. 16. Do you recollect whether or not those two two-jointed machines were "Little Giants?"

Ans. I do not.

Ques. 17. You say that they had a bolt that went through
88 the second joint'?

Ans. Yes; the two-jointed machines.

Ques. 18. How many single-jointed machines were there among those four that you used at Whiskey Hill?

Ans. Two; there were two one-jointed machines and two two-jointed machines.

Ques. 19. Were those Hoskins machine a single-jointed machine?

Ans. Yes, sir.

Ques. 20. How long ago was it that you used those Hoskin machines at Whiskey Hill?

Ans. It was either four or five years ago this fall; I think it is just about four years ago now.

Ques. 21. Was there any difference as to the amount of work done between the two-jointed machines and the one-jointed machines where they were of the same sized outlet?

Ans. I never saw any difference in the work there; I paid particular attention to it, too. The ground was very much alike, and I could see no difference in the work. We used the same sized nozzle on all of them.

89 Ques. 22. What sized nozzle did you use, if you remember?

Ans. Five and a half and six inches.

Ques. 23. How do you mean; that they were five and a half and six inch nozzles, if they were all the same size?

Ans. I had a five-and-a-half inch nozzle and deflector and a six-inch nozzle and deflector—nozzle with the deflector—for each machine. I had the four machines set, and, I not having a head of water so that I could run them all, I would just take the deflector and nozzle off of the two-jointed machine after I had worked out, say, a half day's or a day's piping with it, and I would put it on another of the machines.

Ques. 24. That is to say, you sometimes used a five-and-a-half-inch nozzle and sometimes a six-inch nozzle on each of the machines?

Ans. Yes, sir.

Ques. 25. Were you the proprietor of those machines?

Ans. No, sir; I was foreman.

Ques. 26. Which were the heavier machines to shift around when you had to change their positions—the two-jointed or the single-jointed machines?

90 Ans. The two-jointed machines which I used there was the heaviest.

Ques. 27. Do these hydraulic machines have to be moved around much in hydraulic mines?

Ans. That is owing to the height of the bank. The banks there were shallow. We didn't work any ground over 30 or 35 feet deep, and we had to move them often.

Ques. 28. Which of those two machines worked the easier, so far as manual labor in operating them was concerned?

Ans. Well, there was no difference, so far as I saw. They both worked very easy with the deflector.

Ques. 29. How long were those single-jointed machines kept in use, to your knowledge?

Ans. I was there six months. They had been in use on the claim for a number of years before that. I don't know how long.

By the MASTER:

Ques. 30. How do you know that?

Ans. Because they were old machines. The man who used them told me so there; that is all I know about it.

By Mr. BOONE:

91 Ques. 31. You did not see them used there before you went there?

Ans. No.

Ques. 32. All you know about it is what you were told?

Ans. Yes, sir.

By Mr. WHEATON:

Ques. 33. Were those two single-jointed machines kept in use during the whole of the six months that you were there?

Ans. Yes, sir—that is, not in constant use. We would use one of them half a day or a day, and then change the water over unto another machine. There was two single-jointed machines and two double-jointed, and we would change, after half a day's work or a day's work, from one machine to another.

Ques. 34. The single-jointed machines were used just as much as the two-jointed machines?

Ans. Yes; just the same.

Cross-examination of JAMES H. BRADLEY by Mr. BOONE:

92 Ques. 1. When did you say you first saw the Hoskin machine?

Ans. Well, it is between 1867 and 1870; I don't remember exactly.

Ques. 2. It was not later than 1870, was it?

Ans. I won't be positive about that.

Ques. 3. Was it as late as 1873 or '4 that you first saw the Hoskin machine?

Ans. My recollection is between 1867 and 1870. I couldn't tell. That is my recollection. I can't tell positively. I have been mining myself and superintending mines for other people, and I don't recollect the dates. Probably if I was home and had the books I could tell the dates, but I can't swear positively about it.

Ques. 4. You say you had four machines at work at Whiskey Hill?

Ans. Yes, sir.

Ques. 5. And used one at a time?

Ans. Yes, sir.

Ques. 6. And shifted a stream from one to another?

Ans. Yes; changed water from one to another.

93 Ques. 7. What pressure did you carry there, Mr. Bradley?

Ans. I think the pressure was 225 or '30. I never measured it, but that is what they said. Yes; we did measure one place; it was 225 feet. Yes; I recollect now, we levelled both places; the engineer levelled them. One was 225 and the other was 235, I think.

Ques. 8. You did not move the machines often, did you?

Ans. Oh, yes; I was working off a low bank, and sometimes we would run two days in a place; sometimes half a day; just as it happened.

Ques. 9. You had the four machines standing there, set at a distance apart?

Ans. There was quite a distance between them. The two outside machines was nearly a quarter of a mile apart. We were running out through two different tunnels. We might use one half a day in a place or a day, and then change it off to another place.

Ques. 10. Where were the single-jointed machines placed—on the outside or inside?

Ans. One of them was on the outside—that is, the farthest from the bulkhead. The first machine was a double-jointed ma-
94 chine, nearest to the bulkhead; next came a single-jointed machine and then a double-jointed, and then came a single-jointed, the farthest off.

Ques. 11. You had them placed alternately, then?

Ans. Yes, sir; it just happened so.

Ques. 12. You were a workman there—or what was your position there?

Ans. I was foreman. There was a general superintendent over me, from Boston. I had charge of the works; I was what was called foreman, but then I took charge of the mine with the understanding that I had the hiring and discharging of all the men under me. I had charge of everything, but they had a man who was sent out from the East who was called superintendent.

Ques. 13. What part of the business did you attend to?

Ans. My business was to superintend the work, keep the men to work, keep their time, clean up, and so forth; and in the absence of this superintendent down here I was superintendent.

Ques. 14. Whose construction of machine was the single-jointed machine?

Ans. I understood it was this gentleman's, Mr. Hoskin. I
95 never saw him making them.

Ques. 15. You understood so?

Ans. We called it the Hoskin machine.

Ques. 16. Describe it, please. How was it built?

Ans. I don't know the names they used for them. It was a one-jointed machine. The end of the pipe came into the machine and then there was a joint on the top for a pipe, nozzle, attached to that and held down by bolts, and on the bottom of those bolts were lugs or rollers—we called them rollers—that rolled around.

Ques. 17. That rolled around on the outside of a horizontal plane?

Ans. Yes; it rolled around; there was a casting that projected out—kind of a flange—and the rollers worked around under that.

By Mr. WHEATON:

Ques. 18. Where was Whiskey Hill?

Ans. It is about four miles from Milton. I believe they call it 24 miles from Stockton. It is on the Calaveras river.

Ques. 19. In this State?

Ans. Yes, sir.

96 By Mr. BOONE:

Ques. 20. Is that the same place which you called in the first place the Boston hydraulic property?

Ans. Yes, sir.

Ques. 21. Called also Whiskey Hill, is it?

Ans. The company was the Boston Hydraulic Mining Company, and they were working on Whiskey Hill. It is right opposite Jenny Lind.

Ques. 22. Did you ever work any other hydraulic machines at any other place?

Ans. Yes, sir; I have two machines on my own claim. I am not working them now, but I have worked them for a number of years.

Ques. 23. Do you own a claim now?

Ans. Yes, sir.

Ques. 24. Working it?

Ans. Not now.

Ques. 25. You have been working it since that time, have you?

97 Ans. Yes, sir.

Ques. 26. What kind of machines are those which you used on that claim?

Ans. We called them "Little Giants." I don't know whose they are.

Ques. 27. Single-jointed or two-jointed machines?

Ans. Both two-jointed machines.

Ques. 28. Why didn't you buy a single-jointed machine?

Ans. Because one of those was attached and I got a chance to buy it cheaper than I could buy any other machine.

Ques. 29. How did you get the other one?

Ans. I sent down here to my company and they sent it up. I don't know who they bought it from, but I know we paid for it.

Ques. 30. Did you tell them that you wanted a single-jointed machine?

Ans. No; I did not.

Ques. 31. Which cost the more, the single-jointed or the two-jointed machine? 98

Ans. That is more than I know. I am under the impression, though, that the two-jointed machine, with later improvements, costs the most. I know these hydraulic machines keep making improvements and making us fellows pay for them—what they call improvements.

Ques. 32. When was it you purchased your last machine?

Ans. The last machine I purchased myself was in 1874, I think.

Ques. 33. Which was the first machine in use, the single-jointed or the two-jointed machine?

Ans. The first machine that ever I saw in use was a single-jointed machine.

Ques. 34. You have visited a good many mines, have you not—hydraulic mines?

Ans. Yes, sir.

Ques. 35. What machine do you find generally in use in those mines, the single or two-jointed machines?

Ans. Of late date I find most of them two-jointed machines.

99 Ques. 36. If you were going to purchase a machine now, which would you purchase, a single or two-jointed machine?

Ans. I would purchase the one that I could get the cheapest.

Ques. 37. Regardless of whether they suited or not?

Ans. Well, they both suit. I have used them both, and I wouldn't give any difference for either of them. That is how I come to get here, was by making that remark. I didn't know what was going on. I have my notions; every man has his ideas; so far as they compare, I never put them side by side. All double-jointed machines that I have examined have a bolt going up in the centre, and I have always thought that bolt stopped the water.

Ques. 38. That is the only reason why you think that the single-jointed machine is better, because of that bolt in the double-jointed machine?

Ans. I don't say it is better. I say that if I was going to buy and work a machine to-morrow I wouldn't pay any difference for one machine over the other. That is what I said.

Testimony of Walter R. Craig.

Examination-in-chief of WALTER R. CRAIG on behalf of respondent, by Mr. WHEATON:

100 Ques. 1. Please state your name, age, place of residence, and occupation.

Ans. My name is Walter R. Craig; my age is forty-two years; I reside near Rocklin, Placer county, and my occupation is mining.

Ques. 2. How long have you been a practical miner?

Ans. Since about 1857.

Ques. 3. Please state what experience, if any, you have had in the use of different kinds of hydraulic mining machines.

Ans. Well, we have used nearly all of them, from the hose to the last improvements in the machines. I mean to say by that, that I have seen them used and worked with them some.

Ques. 4. What different hydraulic mining machines have you actually used yourself?

Ans. The globe nozzle and the Little Giant and the machine that father got up, a single-jointed machine, are the only ones that I used practically.

Ques. 5. Was R. R. Craig, one of the defendants in this suit, your father?

Ans. Yes, sir.

101 Ques. 6. Is he living now?

Ans. No, sir; he is not.

Ques. 7. When did he die?

Ans. He died on the 15th of March last.

Ques. 8. What relation, if any, is the defendant, Joseph Craig, to you?

Ans. He is a brother.

Ques. 9. How long, if at all, did you work at hydraulic mining in the mine at Whiskey Hill, mentioned by the last witness?

Ans. I never worked at Whiskey Hill, but I worked at Jenny Lind, on the opposite side of the river from Whiskey Hill. I never worked on the Whiskey Hill mine at all.

Ques 10. How close to the Whiskey Hill mine were you working?

Ans. About a mile.

Ques. 11. Did you know what machines they were using at Whiskey Hill?

Ans. No; I really do not.

Ques. 12. What kind of machines did you use in the Jenny
102 Lind mines?

Ans. We used one of the Victor and one Little Giant.

Ques. 13. Who made the Victor machine?

Ans. R. R. and J. Craig.

Ques. 14. Where was it made?

Ans. At Marysville.

Ques. 15. How many of those Victor machines did R. R. and J. Craig make, to your knowledge?

Ans. I don't know.

Ques. 16. Did they make more than one?

Ans. Yes; they made several of them, but I don't know the exact number.

Ques. 17. Were those Victor machines single or double jointed?

Ans. Single-jointed.

Ques. 18. How was the horizontal motion obtained in that machine?

Ans. They just turned right around. They had a hori-
103 zontal flange underneath with rollers on, worked similar to
the Watson machine. It was held together by the pressure of the rollers on the under side of the horizontal flange.

Ques. 19. Which worked the better, the Victor machine or the two-jointed machine?

Ans. Well, they both worked well.

Ques. 20. Which threw the better stream of water?

Ans. I think we got as good a stream from the single-jointed as we ever got from the double-jointed.

Ques. 21. How did those machines compare as to size?

Ans. This particular Victor machine was a large machine. The Victor was the largest of the two.

Ques. 22. What pressure did they have there that you used with the Victor machine?

Ans. I think we had about one hundred feet. I don't know exactly; I never measured it.

Ques. 23. Please state for how many years you were in the habit of using a single-jointed hydraulic machine.

Ans. Well, we worked on that claim about three years, but
104 we didn't use that particular Victor machine all the time,
constantly.

Ques. 24. Did you use Victor machines anywhere else?

Ans. Only to set them up and to assist in starting them. I did not actually work them anywhere else.

Ques. 25. How many of those Victor machines do you know of being sold and being put into actual use?

Ans. I know of one that has been actually used for a long time near Nevada City.

Ques. 26. For how many years was that used, near Nevada City, to your personal knowledge?

Ans. I think as much as two years, to my certain knowledge. The machine is in use yet, in all probability, I think.

Ques. 27. How did that machine which you saw in use near Nevada City compare in size with the Little Giant machines which you have seen in use—that is, as to the size of the nozzle?

Ans. That ran a six-inch nozzle, and I have seen Little Giants that ran from two to nine inch nozzles.

Ques. 28. How did the operation of that Victor machine, with the
six-inch nozzle, that you saw used near Nevada City compare
105 with that of the Little Giant machine which was also run with
a six-inch nozzle?

Ans. It would throw about the same amount of water, I should think, and equally as good a stream.

Ques. 29. Please state what you mean by a good stream.

Ans. I mean a solid, compact, effective stream, say, that will throw a good distance and cut dirt well, not scatter, not spread all over the claim.

Ques. 30. Is the effective force of a stream injured by its spreading—scattering?

Ans. Very much.

Ques. 31. How did the size of the outlet of the Victor machine which you used at Jenny Lind compare with the size of the outlet of the Little Giant which you used at the same place?

Ans. That of the Victor was larger than than that of the Giant we had.

Ques. 32. Do you recollect how much larger?

Ans. I think one was — eleven-inch inlet and nine-inch outlet, and the other was seven and five, I think. I think the Giant was seven-inch inlet and five-inch outlet.

106 Ques. 33. That is, the size of the nozzle of the Victor was eleven-inch inlet and nine-inch outlet, was it?

Ans. The pipe that supplies the casting with water would be eleven inch-, the inlet, and that where the water is discharged at the big end of the discharge pipe was nine inches.

Ques. 34. Then what would be the size of the smaller end of that discharge pipe?

Ans. I think there was a seven-inch butt on the end of the pipe that the nozzle was screwed on.

Ques. 35. What was the size of the nozzle on that Victor machine?

Ans. There were several different-sized nozzles, ranging from three to six inches; they could be changed.

Ques. 36. What is the part of the discharge pipe that is called the butt?

Ans. It is the end which is riv*itt*ed to the casting—the end where the nozzle screws on.

Ques. 37. How long is the nozzle from that butt, to its extreme outer end?

Ans. About five or six inches, I suppose—from five to seven inches.

107 Ques. 38. The butt at the nozzle of the Victor was six or seven inches, you say. How did the corresponding butt of the Little Giant which you used at Jenny Lind compare, as to size?

Ans. The butt on the Little Giant was four inches—that is, about four inches.

Ques. 39. By these butts you mean the nozzle butts?

Ans. Yes, sir.

Ques. 40. And not the butts of the discharge pipe itself?

Ans. Oh, no.

Ques. 41. Then the capacity of that particular Victor machine was much more than double the capacity of the Little Giant which you used there, was it?

Ans. Yes, sir.

Ques. 42. What was the reason why you did not use that Victor machine constantly?

Ans. It was too heavy to move around and handle. We were washing shallow dirt, and had to move frequently.

Ques. 43. About how much of the time did you use that 108 Victor machine at that place?

Ans. I disremember what proportion of the time, but we didn't use it as much as we did the other machine from the fact of its being so heavy.

Ques. 44. Did you lay it aside and put it out of use entirely?

Ans. No; it was on the ground there when I left. They were not using it and did not do anything with it at all. They didn't lay it away or throw it away or anything of that kind, but left it standing there.

Ques. 45. Was it sold with the mine, if you know?

Ans. I think it was. I was away from the mine some time before the sale was made, and really don't know what parts of the machine were sold.

Ques. 46. In respect to moving around at the mine, as machines have to be shifted to new places, is there any advantage in having the machine lighter instead of heavier?

Ans. Of course; there is a great advantage.

Ques. 47. How does the weight of the single-jointed machines, like the Victor, compare with the weight of double-jointed machines, like the Little Giant, of the same capacity?

109 Ans. I think the Victor would be the lighter of the two, although I don't know the exact weight of either.

Ques. 48. How does the manual labor of working a single-jointed machine like the Victor compare with the manual labor of working a double-jointed machine of the same capacity like the Little Giant?

Ans. I think there is not much difference, if they are equally balanced and well greased. If they are fixed and under equally favorable circumstances they will work about as well.

Ques. 49. Is there any perceptible difference between them in that respect?

Ans. I think not.

Cross-examination of WALTER R. CRAIG by Mr. BOONE:

Ques. 1. Mr. Craig, what connection had you with the business of R. R. and J. Craig?

Ans. None at all, sir, except as to their being my father and brother. Of course I had no interest in the affairs of the concern, except I liked to see them do well.

110 Ques. 2. Did you work for them?

Ans. Sometimes I did.

Ques. 3. What did you do?

Ans. Sometimes I went out and canvassed machines—sold machines and set them up.

Ques. 4. How long did you continue with them?

Ans. In that capacity?

Ques. 5. Yes.

Ans. Well, I couldn't say, Mr. Boone; I have been out sometimes a trip or two and then I didn't go any more for a long time.

Ques. 6. Were you not connected with them, off and on, until the time they stopped manufacturing and turned their business over to Mr. Hoskin?

Ans. Yes; I have not been canvassing the machines.

Ques. 7. You knew their business, did you not, while they were running these machines—manufacturing and selling them?

Ans. Oh, yes; I didn't particularly know all their business affairs.

111 Ques. 8. You knew what machines they were manufacturing?

Ans. I knew they were making and selling machines.

Ques. 9. And you knew what machines they were?

Ans. Yes, sir.

Ques. 10. You knew when they were making the Globe machine, did you—the machine which was known originally as the Craig machine?

Ans. Yes, sir.

Ques. 11. You knew when they changed that for a two-jointed machine, did you not?

Ans. Yes; I knew it was changed, but I don't know the particular day or time it was changed.

Ques. 12. When was this Victor machine, that you speak of, made?

Ans. I think it was made some time about the year 1871, if I remember right.

Ques. 13. That was before the two-jointed machines were made, was it not?

112 Ans. Yes, sir.

Ques. 14. Do you know of any single-jointed Victor machines that were made after the two-jointed machines were put in operation?

Ans. I do not; I couldn't say as to that.

Ques. 15. Do you know whether any single-jointed machines were made after the two-jointed machines were made and put on the market?

Ans. I don't know.

Ques. 16. Do you know of any?

Ans. I don't know of any—I mean to say I don't know whether or not they were made.

Ques. 17. Do you know whether or not the Craigs made them?

Ans. I do not.

Ques. 18. You were canvassing for them, were you not?

Ans. Not a- that time particularly.

Ques. 19. You have since that time, have you?

113 Ans. Yes.

Ques. 20. Did you canvass since that time for any single-jointed machine?

Ans. I think not.

Ques. 21. You say you did not use this Victor machine in the Jenny Lind mine a great deal?

Ans. Not very much.

Ques. 22. Laid it off to one side, did you, and used other machines?

Ans. Yes, sir.

Ques. 23. What other machines did you use in its place?

Ans. We had the Little Giant.

Ques 24. Any other?

Ans. I think not.

Ques. 25. Didn't you get one of Fisher's "Hydraulic Chiefs?"

Ans. No, sir.

Ques. 26. Sure of that?

114 Ans. I am quite sure of it; never had one never used one at any time.

Ques. 27. How many of those Victor machines were sold?

Ans. I don't know.

Ques. 28. How many do you know of having been sold?

Ans. Two, I think.

Ques. 29. How many two-jointed machines do you know of having been sold?

Ans. I know of quite a number, but I couldn't tell you how many.

Ques. 30. Can't you give us something near the number?

Ans. No; I have no idea how many have been sold.

Ques. 31. Two hundred?

Ans. I don't know.

Ques. 32. More or less than two hundred, do you think?

Ans. I have no idea; I don't know how many machines have been sold.

115 Ques. 33. How many two-jointed machines have you ever seen in use?

Ans. Well, I don't know how many I have seen; I haven't counted them. I have seen quite a number of them.

Ques. 34. A large number, is it not?

Ans. I have seen quite a number; yes.

Ques. 35. What machine is generally used in the mines, the single-jointed or the two-jointed machine?

Ans. There are several kinds of machines—the Fisher machine, the Little Giant machine, the Watson machine.

Ques. 36. Question 35 repeated.

Ans. At the present time?

Ques. 37. Yes; at the present time, and for the last ten years?

Ans. I don't know that I understand what you mean by generally. There is all kinds of machines being used in the mines.

Ques. 38. What kinds of machines have been generally used?

Ans. I will answer by saying double and single jointed machines, then, because I have seen both used.

116 Ques. 39. Were not the single-jointed machines which you know of having been used during the last ten years made before two-jointed machines came in use?

Ans. I think they were; some of them.

Ques. 40. Don't you know that all of them were?

Ans. I don't know that I do; no, sir.

Ques. 41. Who manufactured single-jointed machines?

Ans. I think Watson, at Nevada City, manufactured one pattern of a single-jointed machine.

Ques. 42. Was he not enjoined over ten years ago by the United States court here from making them?

Ans. I don't know when the date was.

Ques 43. Who else has manufactured single-jointed machines?

Ans. This Craig machine, my father and brother.

Ques. 44. When did they stop manufacturing them?

Ans. I don't know when the last machine was made.

117 Ques. 45. Have they made any within the last ten years?

Ans. Not that I know of.

Ques. 46. Do you know anything about it?

Ans. I don't know, as I told you before, when they quit making those machines or how many they did make.

Ques. 47. Then you don't know whether or not there has been any single-jointed machine made in the last ten years?

Ans. I never have made any.

Ques. 48. Do you know of any one else who has made any in the last ten years?

Ans. I do not, and I don't know that they have not.

Ques. 49. All you know about the single-jointed machine is what you obtained from your use of the Victor machine, is it not?

Ans. Except that I have seen other machines run.

Ques. 50. But you never ran any other yourself, did you?

Ans. I did not.

Ques. 51. Was there not a tendency with that Victor ma-
118 chine when the water came on it to pitch the point of the
nozzle up in the air.

Ans. No; I never saw anything, when it was properly screwed down, made tight, to show that it had that tendency.

Ques. 52. Has not the water that tendency with that machine, the water coming in, to throw the point of the nozzle up in the air?

Ans. I never have seen it throw it up. It may have that tendency. I never have experienced any difficulty with it from that.

Ques. 53. How long altogether did you personally run that machine?

Ans. Well, off and on I worked it a year or two.

Ques. 54. What do you mean by off and on—every six months?

Ans. Occasionally we would use it, and then we would not use it for awhile.

Ques. 55. How long in the aggregate did you use that machine?

Ans. I don't know; I couldn't say how many weeks or months we did use it up there.

Ques. 56. Was it ten days or two weeks?

Ans. Yes; more than ten days.

119 Ques. 57. Was it two weeks?

Ans. Yes, sir.

Ques. 58. A month?

Ans. Say a month.

Ques. 59. And it was there on the mine two years?

Ans. About that time, I guess. It was a very large-sized machine, and we had not enough water for handling it, and it was very heavy and cumbersome to handle. That was one of the reasons for throwing it aside.

Ques. 60. Then it did not throw a good stream?

Ans. It threw an excellent stream, but was capable of throwing more water than we had to fill it with.

Ques. 61. What do you mean by that?

Ans. The machine was sufficiently large to throw more water than we had in the ditch to use.

Ques. 62. If it threw the water under the head that you had as well as the other machine why was not the machine used; why didn't you use it?

120 Ans. Simply because it was of more capacity than was necessary for us, and was a cumbersome machine to move around. As I explained before, this was a large, heavy machine, and the Giant which we used was a small, light machine.

Ques. 63. Did it work hard on its joints?

Ans. Not very.

Ques. 64. As hard as the two-jointed machine?

Ans. Well, yes; it would work as hard as the two-jointed machine.

Ques. 65. Any harder than the two-jointed machine?

Ans. Not any when it was properly greased up and in good condition, I think.

Ques. 66. Well, do you know?

Ans. Well, I would think it worked a little harder, perhaps.

Ques. 67. Even under the best conditions it worked harder, didn't it?

Ans. Not under the best conditions, I think.

Ques. 68. I am not asking you what you think. I want to know what you know. Do you know?

121 Ans. There was very little difference in the working of the two machines when they are under equally good conditions.

Ques. 69. Does the single-jointed machine under the best circumstances work harder than the two-jointed machine under the best circumstances?

Ans. No, sir; it does not, in my opinion.

Ques. 70. Then, in your opinion, a single-jointed machine is just as good as a two-jointed machine, is it?

Ans. I think so.

Ques. 71. Did you tell the Craigs so in 1876 and '7 and '8?

Ans. I don't know that he ever asked me such a question.

Ques. 72. Did you ever tell anybody so before you came here?

Ans. I have frequently said that the single-jointed machine was as good as the Giant or any other machine I had ever seen, I think.

Ques. 73. You think that. Do you know you did?

Ans. Well, I know I have; I know I have said so.

122 Ques. 74. When you were selling these machines did you represent that the two-jointed machine was the best machine?

Ans. I don't know that I made just such a representation as that at all.

Ques. 75. You were selling two-jointed machines for the Craigs, were you not?

Ans. I don't know that I ever canvassed for machines after the two-jointed machines or Little Giant came in use. In fact, I never canvassed for the machines at any time very much, Mr. Boone.

Ques. 76. You spoke about one Victor machine near Nevada City. Who owned that machine?

Ans. It is run in what is known as the Gentry claim, and is owned by Hirschman, Grover, and others. I don't know who all the partners are in the mine.

Continued, by consent, until to-morrow, 29th instant, at ten o'clock a. m.

WEDNESDAY, *November* 29, 1882.

Present: Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for respondents.

Testimony of Richard Hoskin.

123 Cross-examination of RICHARD HOSKIN by Mr. WHEATON:

Ques. 1. Have you with you now, Mr. Hoskin, the contract that was entered into between you and the defendants, R. R. and J. Craig?

Ans. I have.

(Respondent- puts in evidence the contract above referred to, now produced by the witness, being agreement between R. R. Craig and Joseph Craig and Richard Hoskin, dated the 24th day of October, 1871, marked "Respondents' Exhibit 1, Accounting.")

(Objected to by complainant on the ground that all the parties to the contract are defendants in this action, and that the contract is of a date prior to the date of the reissued letters patent under which this suit is brought.)

It is agreed that a copy of said contract, certified "correct" by the examiner, may be made and substituted in the place of the original and such original withdrawn.

Ques. 2. Are the signatures to this contract, Exhibit One, the signatures of R. R. Craig and Joseph Craig and yourself?

Ans. They are.

124 Ques. 3. After that contract was executed please state whether you and the defendants Craig did business under it.

(Objected to by complainant- as irrelevant and immaterial.)

Ans. We did.

Ques. 4. Did you, under this contract, manufacture and sell machines and pay the royalties to the defendants Craig as provided for in this contract?

(The same objection by complainant-.)

Ans. I did, up to the beginning of 1879.

Ques. 5. I see in this contract there is mentioned a patent granted to Charles F. Macy and Seth Martin December 8th, 1863; that patent expired December 18th, 1880, did it?

Ans. It did.

Ques. 6. You say you acted under this contract until 1879. What change was then made in your actions?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. By the terms of the contract the Craigs were to furnish me
with machines at cost. This they did for a few months, but on
account of want of promptitude in footing the foundry
125 bills — some little delay. I paid the foundry bills. The
machines were charged on the foundry books to the Craigs,
but I paid the bills up to the early part of the year 1879, when, by
mutual agreement, that arrangement set forth in the contract were

set aside and the machines were charged to me and not to the Craigs, and the Craigs were credited by royalty on such and such a sized machine.

Mr. BOONE:

Ques. 7. Was that a written contract?

Ans. No; it was a verbal contract between the parties concerned, and my books show that in May, 1879, the Giants were charged directly to me and the Craigs were credited by royalty only; before that they were charged to them as per the contract.

By Mr. WHEATON:

Ques. 8. Were you interested all the while in the foundry which furnished the hydraulic machines?

Ans. Not all the while.

Ques. 9. When did you become interested in the foundry which manufactured the hydraulic machines after the execution of this contract, Exhibit 1?

Ans. I think it was in the fall of 1877 that I became interested in the foundry.

126 Ques. 10. After that the machines were manufactured at your foundry and were charged to Craig, were they, until the fall of 1879?

Ans. They were charged to Craig. He never paid a bill; I always paid the bills of the foundry.

Ques. 11. As a matter of fact, you always paid for them?

Ans. I always paid for them.

Ques. 12. Then, as a matter of fact, in 1879 you made that change in your agreement, which had actually been in operation since the fall of 1877?

Ans. Yes, sir.

Ques. 13. After that did you continue to pay the royalties for the use of Craig's patent agreed upon in this contract, Exhibit 1?

Ans. Yes, sir.

Ques. 14. Upon what basis did you estimate the cost of these machines as you have given it in your direct examination? Was it the actual cost of the machines to the foundry, or did it include the manufacturer's profit that would result to the foundry?

Ans. Actual cost.

127 Ques. 15. It did not include the manufacturer's profits?

Ans. No; we made up the actual cost of the machines without any extras at all.

Ques. 16. That was the actual cost to the foundry, was it?

Ans. Yes, sir.

Ques. 17. Did you make any allowance in that for any bad debts?

Ans. No.

Ques. 18. Did you make any allowance in that for capital invested in the business?

Ans. No.

Ques. 19. Did you make any allowance in that for your personal expenses in connection with your business of selling the Giants?

Ans. No.

Ques. 20. How much, if anything, was lost or expended in those ways?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I think that capital invested, taxes on property, wear and tear of machinery, and all that sort of thing. I should think 128 ten per cent. on the gross receipts.

Ques. 21. Do you mean the gross receipts to the foundry?

Ans. No; the gross receipts on the sale of the "Giants." The same rule would apply to other work in the foundry, and that would be, I think, the full share that the Giants should bear.

Ques. 22. Has there been any considerable number of bad debts made in the sale of the Giants?

Ans. Yes; but not since the reissue of Fisher's patent.

Ques. 23. Has there been any bad debts since the reissue of Mr. Fisher's patent?

Ans. Yes, sir; one that I recollect now.

Ques. 24. How much was that?

Ans. $125.00. That was a total loss. There were others, but there is a bare possibility that they may be collected, although I don't think they ever will. I couldn't swear that they are bad.

Ques. 25. How much have you got outstanding now from the sale of the "Giants" since September 2nd, 1879, which is uncollected?

129 (Objected to by complainant- as irrelevant and immaterial.)

Ans. I don't know, sir; I have not examined to see.

Ques. 26. Can you give an idea?

Ans. No, sir; I can't give any idea without referring to the large ledger, for the reason that the Giant account is no longer kept seperate.

Ques. 27. Is there any considerable number of machines that you have sold and for which you have not been paid since September 2nd, 1879, and which were included in the account of sales which you rendered in your direct testimony?

Ans. Yes, sir; quite a number.

Ques. 28. Please state whether or not your arrangements with the defendants Craig were such that you had the right to manufacture and sell under each and all of the patents which they owned as well as under those which you owned.

(Objected to on the ground that the contract in evidence is the best evidence.)

Ans. They were.

Ques. 29. The Allenwood patent was owned by the Craigs 130 at the time of the date of this contract, was it?

Ans. I think not.

Ques. 30. When they afterwards purchased it was there any agreement between you and them as to your having the right to use that patent as well as all the rest of their patents?

Ans. Certainly there was. The Allenwood patent claimed a combination of the two-jointed machine with a discharge pipe, & it was necessary to have the right to use that patent to make the sales of that machine that I was then making.

Recess until one o'clock p. m.

WEDNESDAY, *November* 29, 1882—afternoon.

Present: Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for respondent-.

Cross-examination of RICHARD HOSKIN continued.

By Mr. WHEATON:

Ques. 31. Please state whether, ever since the 2nd day of September, 1879, you have had the full right to use all of the patents owned by either R. R. Craig or Joseph Craig, or both of them, as well as your own patents.

131 Ans. I have.

Ques. 32. Did you ever make any machines according to the patent granted to you which is in evidence in this case?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. Yes, sir; quite a number of them.

Ques. 33. What were those machines called?

Ans. We called them the Dictator.

Ques. 34. Were they also known as the Hoskin machine?

Ans. Yes, sir.

Ques. 35. When were those Dictator machines made by you?

Ans. I commenced making them some time in 1870 and continued making them at intervals for some three or four years.

Ques. 36. How many of those Dictator machines did you make which went into actual use, as near as you can now recollect?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I think from fifteen to twenty. There might have
132 been more, but I would not be positive, but I think about
twenty.

Ques. 37. Did you actually work any of those machines yourself?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. Certainly I did, frequently.

Ques. 38. Have you actually worked the Little Giant machine yourself?

Ans. I have.

Ques. 39. How did the working of the Dictator machines compare with the working of the Little Giant machines?

(The same objection by complainant-.)

Ans. In what respect?

Ques. 40. In all respects—as to the kind of steam it threw, as to the amount of power it took to move the nozzle, as to convenience of removing the machines from one place to another in the mines.

Ans. The Dictators threw the best stream of any machine I have ever seen, not excepting the Giant. As to the amount of power, they worked very easily; very little difference between them
133 and the Giant. The Dictator was the lightest machine, somewhat lighter, when the same size machine was used, but there was not much difference in that respect.

Ques. 41. How long did those Dictator machines which you sold continue in actual practical use?

Ans. Some that I know of were used for seven years. I am satisfied that some are in use at present.

By Mr. Boone:

Ques. 42. What do you mean by "I am satisfied?"

Ans. I occasionally get an order for the wheels for repairing the Dictator machine as they are worn out, wheels on which they run; hence I infer they are using the machines.

Ques. 43. You don't know whether or not they have been continuously used, do you?

Ans. No, sir; I know of their being used continuously for six or seven years.

By Mr. Wheaton:

Ques. 44. In what claim did you know of the Dictator machine being continuously used for seven years?

Ans. Used in Chalk Bluffs, in what is known as the Duryea claims, afterwards purchased by Alvinza Hayward. They were also used in Gold Run for several years, in the Taylor claims.

Ques. 45. How many Dictator machines were used in the
134 Chalk Bluffs claims that you have mentioned?

Ans. I think they had two, if not more; two, anyhow.

Ques. 46. What other single-jointed machine, if any, did they have in those same claims at the same time?

Ans. They had a Clipper.

Ques. 47. Of whose manufacture was the Clipper machine?

Ans. My manufacture.

Ques. 48. What was the difference between the Clipper and the Dictator machines?

Ans. The Clipper had a ball at the end of the curved section instead of a flange. It had a flange underneath the ball, against which the wheels, which were three in number, ran; and these wheels were pivoted on a ring, from which ears extended up, to which the upper curved section was also pivoted.

Ques. 49. The centre of motion in the upper curved section, then, was not in a line with the centre of the wheels in the Clipper machine?

Ans. No, sir.

Mr. **Boone**: I object to all the testimony of this witness in
135 regard to single-jointed machines on the ground that it is
not proper cross-examination.

Mr. **Wheaton**: I will make Mr. Hoskin my own witness & we will either go on now and finish his evidence or wait until the complainants have concluded their opening testimony, as complainants' counsel may elect. I do not, however, admit that this is not proper cross-examination.

Ques. 50. How long was that Clipper machine at work in the Chalk Bluffs claims?

Ans. I know of its being there for some three or four years, and it — there still in use, I think. I supplied a part a short time ago.

Ques. 51. So far as you know, what became of those single-jointed machines which were in use so long at Chalk Bluffs?

Ans. I don't know, sir. I think they are there still.

Ques. 52. Where were they the last you knew anything about them?

Ans. They were on the claims some four or five years after I sold them.

Ques. 53. Please state whether or not they were on that claim the last time you were on the claim.

Ans. They were.

136 Ques. 54. And that was some four or five years after you sold them?

Ans. Yes, sir.

Ques. 55. What were they doing there at that time?

Ans. Piping. At intervals since then I have supplied parts of those machines as they have become worn out or broken by accident.

Ques. 56. How long did you ever use in any one of your own claims, if at all, one of those Clipper machines or one of those Dictator machines?

Ans. I used a Clipper for some five or six years in my own claim at Gold Run.

Ques. 57. When did you commence making two-jointed machines?

(Objected to by complainant- as immaterial.)

Ans. I think some time in 1871.

Ques. 58. Was it before or after this contract between you and the Craigs was executed?

Ans. Before.

137 Ques. 59. How came you to change from making the single-jointed machine to making the two-jointed machines?

Ans. Partly caprice; partly because I thought by having a bolt to confine the two cross-sections, and the upward pressure coming against the bolt, I thought I would get an easier-working machine on the back joint.

Ques. 60. Were there any other reasons?

Ans. Yes, sir; as they were getting to use heavy pressures, I thought I would rather depend on steel or good rod iron than cast-iron flanges to hold the parts together, and, further, I thought there would be more facility for oiling; that they would be more likely to attend to that matter when they could do so—when the water was on—at any time.

Ques. 61. Was there any advantage in making the two-jointed machine in the way of price—that is, in the cost of making them?

Ans. No.

Ques. 62. Which machines cost more to manufacture, two-jointed or single-jointed machines?

Ans. The two-jointed machine cost the most; more labor about it.

Ques. 63. While you had both kinds of machines for sale, which machine took best in the market, the two-jointed machine or 138 the single-jointed machine?

Ans. Both being equally good, the customers took what I supplied them with. If they wanted a machine they took such machines as I had on hand. I never heard any objections against single-jointed machines. In fact, I have often been requested to make single-jointed machines, as parties preferred them to any other. My reason for not doing so was the expense of getting up patents for different sizes and different sorts of machines, and as I had the monopoly of the manufacture it was not worth while to do it.

Ques. 64. How did the sizes of the single-jointed machines which you made compare with the sizes of the double-jointed machines which you were making in 1871, 1872, and 1873?

Ans. They were equally as large as the double-jointed machines which I had made. The largest double-jointed machines which I made were finished after I made this agreement with the Craigs. They were 11-inch inlet. Up to that time I had made no larger than 9-inch inlet.

Ques. 65. What was the size of the largest single-jointed machine that you ever made?

Ans. 11-inch inlet.

Ques. 66. What was the size of the largest Little Giant machine or two-jointed machine which you have made?

139 Ans. 18-inch inlet.

Ques. 67. Please explain what you mean when you say you had a monopoly of the manufacture of hydraulic machines.

Ans. I had the control of one patent which was an absolute necessity—that is, the rifle patent, and without which no machine was a practical machine, Giant or any other machine.

Ques. 68. How long was the Fisher machine in competition with you on the market?

Ans. I think after the decision of the suit which Craig commenced against me for infringement was decided against me we entered into that agreement; suit was immediately commenced against Mr. Fisher by Messrs. Craig, and an injunction granted which stopped him from manufacturing. How long a time it took to do that I don't remember now exactly, but I know the suit was commenced very shortly after the agreement between the Craigs and myself.

Ques. 69. (Question 68 repeated.)

Ans. A very short time; I suppose probably about six months; maybe not so long, maybe a little over; I think not so long.

Ques. 70. Do you know whether or not the Fisher machine could be used practically without the use of the device which you
140 call rifles, and which was protected by the Macy and Martin patent?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. It could not. It is utterly useless for mining purposes without the rifles.

Ques. 71. How do you know that?

Ans. By experimental trial. The Giant was no better under the same circumstances.

Ques. 72. Please state whether or not anybody else besides the defendants in this case has been manufacturing hydraulic mining machines in California since the time when Mr. Fisher was enjoined from making those rifles.

Ans. I can't tell. There were other suits against other parties for manufacturing, and I don't know which was enjoined first, whether Fisher or Watson. If Fisher was enjoined first, probably the other parties manufactured subsequently.

Ques. 73. Was there any one besides the defendants manufacturing any kind of hydraulic mining machines in California after all the injunctions which you have mentioned were issued?

Ans. I think not; I never heard of any.

141 Ques. 74. If there had been any hydraulic mining machines which were put on the market would you have known it?

Ans. I think I would, most certainly.

Ques. 75. Was there any other person in California from whom miners could procure hydraulic mining machines after those injunctions were all served other than the defendants in this case?

Ans. No one that I know of. Hinckley and Company, in San Francisco, for a short time manufactured machines here under my patents and under my authority and accounted to me for the machines sold.

Ques. 76. About how long did they continue to do that, and when was it?

Ans. A few months. I think I moved the patents from Hinckley & Co.'s in 1871.

Ques. 77. State whether or not they have ever manufactured any hydraulic mining machines since then.

Ans. Not that I know of. I should say I know of one machine being manufactured somewhere here in this city in, I think, 1871 or 1872, but it was never used; it was worthless. The party attempted to use it without rifles in the discharge pipe, and could get no stream whatever and threw it away. There was a machine used in
142 Michigan Bluff that they got a license to use the rifles in. Whether that was before the injunctions were served or not I don't know. That was a two-jointed machine. I think it was after

the injunction was served. That was a Yooman machine used in the Van Emmons mine. I saw it in use there.

Ques. 78. Please state whether or not the defendants, Joseph Craig and R. R. Craig, have either made or used or sold any hydraulic mining machines since the 2nd day of September, 1879, to your knowledge?

Ans. They have not; I should qualify that, though. R. R. Craig, on two or three occasions has taken orders for machines for parties, sent the orders to me, and paid me for them the same as anybody else. I allowed him, the same as any other customer, a commission for selling.

Ques. 79. What was the value of any advantage that there was in making or selling two-jointed machines instead of single-jointed machines?

Ans. I think there was no difference at all in that respect. The one-jointed machine was fully as good as the two-jointed machine, and with the experience I have gained since, I think I have a better opinion of the one-jointed machine than of any two-jointed machine that I have ever made—that I can make a better one-jointed machine.

Ques. 80. What reason can you give for the single-jointed
143 machine throwing a better stream than the Little Giants?

Ans. There was a tendency in the one-jointed machine to raise with the force of the water, and to counteract that tendency we made the discharge pipes long. The taper of the discharge pipe being more gradual than in a shorter pipe, where the two ends were of the same calibre, the stream was not so much broken; was always steadier and more compact. The best streams that I have ever seen came from single-jointed machines. The first machine I made, the Dictator, threw the best streams I have ever seen.

Ques. 81. Do you know of your own knowledge whether or not the miners who had purchased and were using Fisher machines paid any royalties on account of the patents that the defendants in this case owned for the privilege of combining the use of those machines?

(Objected to by complainant- as irrelevant and immaterial)

Ans. I never collected any royalties myself, but I received on several occasions money as my share of royalties so collected in accordance with the agreement between myself and Craig.

Ques. 82. You refer to agreement Exhibit 1?

Ans. Yes, sir; the Craigs paid me on several occasions money which they told me at the time that they had received as royalties from parties for the use of the Fisher machines?

144 (Complainant- objects to the last answer as hearsay.)

Re-examination of Richard Hoskin by Mr. Boone:

Ques. 1. You have paid a large amount of royalties to defendants Craig since September 2nd, 1879, have you not, Mr. Hoskin?

Ans. I have.

Ques. 2. Royalty for the manufacture of the Little Giant machine?

Ans. Royalty for a rifle covered by the patent which they owned.

Ques. 3. Roylaty paid under that contract—Exhibit 1?

Ans. Yes; I have paid some under that contract.

Ques. 4. You controlled all the hydraulic mining machines owned by the defendants Craig, did you not, Mr. Haskin?

Ans. I did.

Ques. 5. That included one or two single-jointed machines, did it not?

145 Ans. Yes, sir.

Ques. 6. And you controlled your own single-jointed machine, did you not?

Ans. Yes, sir.

Ques. 7. After entering into that arrangement with the Craigs, how long did you continue manufacturing single-jointed machines?

Ans. I manufactured some Clippers at intervals.

Ques. 8. (Question 7 repeated.)

Ans. For six or seven years, I think, I manufactured them, at intervals, when called for.

Ques. 9. Only when called for?

Ans. Yes, sir.

Ques. 10. How many did you manufacture during those six or seven years?

Ans. That I can't answer.

Ques. 11. In what proportion were they, in number, to two-jointed machines?

146 Ans. Oh, there was a vast difference in the number. The two-jointed machines outnumbered the others.

Ques. 12. Did you manufacture and place on the market for sale, outside of specific orders, any single-jointed machines after you entered into this contract with the Craigs?

Ans. I did.

Ques. 13. How long did you continue that?

Ans. I manufactured what we called the Clipper and exhibited it there, and kept it until it was sold.

Ques. 14. How many did you manufacture?

Ans. I don't know.

Ques. 15. Can't you give us some idea?

Ans. No; the reason is this: there would be months that I would not visit the foundry, and the account would be kept; they went by the number—number 1 and 2, and so on, and all I cared was to get the account of the number sold.

Ques. 16. You simply made the Clipper machine and placed it on exhibition with the others, did you?

147 Ans. Yes, sir.

Ques. 17. And when parties wished to purchase machines you showed them all the different kinds that you had?

Ans. I didn't always keep the single-jointed machines.

Ques. 18. You kept one of them on hand sometimes?

Ans. Sometimes I did.

Ques. 19. And when parties wished to buy you showed them the single-jointed machines as well as the others?

Ans. When I had them I did. I should also qualify that. After the agreement with Mr. Craig, under which they were to sell a certain number of machines which were defective, inasmuch as they had no packing—they had a metallic joint which made them useless—they were modified and packing put in, which made them good, effective machines. These machines were sold and I received the profits of the sale, and these were all one-jointed machines. These sales took place subsequent to the agreement with the Craigs.

Ques. 20. And these machines referred to were on hand at the time of the contract?

Ans. No; not finished; there was one of them finished.

148 Ques. 21. They were in course of construction?

Ans. Yes, sir; they were all finished and sold and the profits turned over to me. Orders would come in and would be filled, and it was just the same as if I manufactured them myself.

Ques. 22. Why did you cease manufacturing single-jointed machines?

Ans. I sent the patents for my two-jointed machines to Marysville. I didn't send the patent for one-jointed machines until some little time afterwards. They went on manufacturing number one and two—two-jointed machines.

Ques. 23. Whom do you mean by they?

Ans. The Empire foundry—Williamson & Cory. They were manufacturing for me to my order. As larger machines were ordered, the order would come in for larger machines, without my knowledge they would go to work and make new patterns, & they made those patterns for two-jointed machines, and they went on manufacturing two-jointed machines. I didn't feel that it was worth while for me to go and make other sets of patterns for single-jointed machines and keep such a multitude of patterns, and as two-jointed machines were well accepted by miners and approved of, I let them go and kept on manufacturing from those patterns that they had made.

Ques. 24. Which was the cheaper machine in construction?

149 Ans. I can make a one-jointed machine cheaper than a two-jointed machine. There is not so much labor. There really is not any very material difference.

Ques. 25. Has there been any hydraulic mining machine on the market, besides those manufactured by you and under your authority, since September 2, 1879?

Ans. I don't know of my own knowledge of any; I have never seen any.

Ques. 26. You say the rifles were necessary to the successful operation of any hydraulic machine?

Ans. Absolutely so.

Ques. 27. Who was the inventor of the rifle?

Ans. Macy and Martin.

Ques. 28. When was it patented?

Ans. In 1863, I think.

Ques. 29. The defendants Craig purchased that patent from Macy and Martin, did they not?

Ans. I believe so.

150 Ques. 30. Don't you know that they did?

Ans. Yes; I think I have seen the assignment.

Ques. 31. Do you know what they paid for it?

Ans. No, sir; I do not.

Ques. 32. They also purchased the Allenwood patent, did they not?

Ans. Yes, sir.

Ques. 33. Do you know what they paid for that?

Ans. No, sir.

Ques. 34. How much did the rifles for a Little Giant machine cost to manufacture?

Ans. That depended on the size of the machine. Some machines had three sets, some two sets, some only one set. On the average they cost, say, from two and a half to three dollars on a machine.

Ques. 35. When did you say you commenced to manufacture two-jointed machines?

Ans. I think about a year after I got my patent, which is
151 dated July 19, 1870. I think some time in the year 1871.

Ques. 36. Before or after you entered into the contract with the Craigs?

Ans. Before.

Ques. 37. How long before?

Ans. The date of the contract is October, 1871, and I began the manufacture of the two-jointed machines early in 1871, I think.

Ques. 38. You say there was a difficulty with the single-jointed machine—that they had a tendency to raise up?

Ans. That was no difficulty; that was an advantage.

Ques. 39. Didn't you say that you had remedied that difficulty by putting on a long discharge pipe to balance?

Ans. No; the discharge pipe to balance that; there was no balance required. There was no balance in the single-jointed machine.

Ques. 40. Didn't you say you put on a long discharge pipe to overcome that tendency to rise?

Ans. Yes, sir.

Ques. 41. When did you do that?

152 Ans. After the first one or two machines that I tried—experimented on—I found that I got no better stream from the long pipe than I did from the short one.

Ques. 42. When did you first counteract the tendency of the discharge pipe to rise by lengthening the discharge pipe?

Ans. I never did counteract that altogether, because that depended on the amount of pressure or upward force of the water. Put a machine where there was 150 or 200 feet of pressure and it would work without a balance, without any tendency to raise; put it where there were 300 feet of pressure and there would be a tendency to raise; then they had to make the discharge pipe longer and heavier, so I put a balance on so as to counteract the tendency to raise.

Ques. 43. Didn't that make them work hard?

Ans. No, sir; it made an equilibrium; it was immaterial whether I put on a balance or made the discharge pipe longer.

Ques. 44. When did you make the first machines and put on a longer discharge pipe?

Ans. I sold the first machine and put it up and found it was somewhat defective in that respect and made the discharge pipe longer.

Ques. 45. Remedied it on the first machine that you made?

153 Ans. Yes, sir; as soon as I found it defective I remedied it.

Ques. 46. On that first machine?

Ans. Yes, sir.

Ques. 47. Did you have to counteract that trouble afterwards?

Ans. I never considered it a trouble; all there was to be done was to hang a weight or a bag of sand on the back part of the discharge pipe to get an equilibrium; in fact, some of the miners preferred it that way, because the force of the water lifted it up, and when they wanted the pipe to remain stationary they would slide their balance up to keep it there; they preferred to have it with that lifting, lifting itself.

Ques. 48. So that the lifting was an advantage rather than an objection?

Ans. While the men are working it.

Ques. 49. Did not the workmen have to keep hold of it all the time?

Ans. When he left it he would put it on his sliding balance and keep it there.

Ques. 50. Was there any difficulty at all with the handling of that single-jointed machine?

154 Ans. I never heard of any; in fact, I have yet to meet with the first person to whom I ever sold a single-jointed machine who did not prefer it to a two-jointed machine.

Ques. 51. What happened when the pressure of the water was removed when you stopped your stream?

Ans. The pipe would drop if a miner was foolish enough to let it be in that position; no practical miner would leave his pipe in that condition.

Ques. 52. How did they fix it, then, when they shut the water off?

Ans. They had a trestle or other support, and when the water was turned off he rested his pipe on that, so that when the pressure of the water was gone the pipe would not fall down to the ground and injure the nozzle.

Ques. 53. Do you require a trestle or support for the two-jointed machines?

Ans. No; not in the same position. A miner often puts the trestle behind instead of in front; requires something behind instead of in front, because the balance which supports the pipe when full of water, which balances it, overcomes it when it is empty, and the pipe will rear right up; so he puts a support behind, under his balance box. When the water is shut off then the pipe stands in position.

155 Ques. 54. You supposed you were supplying the market with the best machine you could, did you not, Mr. Hoskin?

Ans. Oh, no, sir; I did not.

Ques. 55. You knew that the other was a better one all the time, did you?

Ans. No, sir; I think I could put on improvements.

Ques. 56. On what?

Ans. On any machine that I ever made.

Ques. 57. Can you state how much royalty you have paid the Craigs since September 2nd, 1879?

Ans. I cannot without reference to the books.

Ques. 58. Will you give us a statement of that?

Ans. I will, sir.

Recross-examination of RICHARD HOSKIN by Mr. WHEATON:

Ques. 1. Under article 9 of the contract, Exhibit 1, there is a provision that the parties of the first part, defendants Craig, may sell the fifteen machines that they have on hand. What kind of machines were those? 156

(Objected to by complainant- as irrelevant and immaterial.)

Ans. They were all single-jointed machines.

Ques. 2. What name did those machines go by, if any?

Ans. I believe they gave them the name of the Victor, but we called them the Dictator, and they were known as the Dictator chiefly, because they were of precisely the same principle as the Dictator machine.

Ques. 3. Did you hear the evidence of Walter Craig, given yesterday afternoon?

Ans. I did.

Ques. 4. You heard him speak of a single-jointed machine in the Jenny Lind claim, Calaveras county. Please state whether or not this was one of these fifteen.

Ans. That I don't know. I never saw the machine in the claim. From his description of the machine I judge it was one of these machines; his description corresponded with those machines exactly.

Ques. 5. Have you ever used or seen used the Fisher machine?

157 Ans. I have.

Ques. 6. How does the working of the Fisher machine, as Mr. Fisher himself made it, compare with the working of the Little Giant machine?

Ans. Oh, the Fisher machine works harder, and it cannot be worked in the same manner.

Ques. 7. Please explain fully why not.

Ans. The Fisher machine requires a compound lever, one lever to put it round and the other to lift the pipe. The Giant can be worked from the pipe alone; the pipe is the lever. The reason why the Fisher machine cannot be worked from the pipe is that you take hold of the pipe and endeavor to move it round the swivel joint, use the pipe as a lever to move it round the swivel joint, and you pry one side of his joint from its bearing and the pipe squirts and the pipeman gets deluged; hence his lever is a necessity.

Ques. 8. This lever connected with the upper curved section of his machine back of the bearing of the outlet pipe in that upper joint?

Ans. The fulcrum is there; the fulcrum is back of his joint & one under the lever is connected with the pipe, and the other end is connected with another lever. There is a compound lever.

158 Ques. 9. Could the Fisher machine be operated successfully with the deflector?

Ans. I think not, sir.

Ques. 10. Why not?

Ans. For the reason that I before stated, that it would pry the joint from its bearing and the water would squirt out.

Ques. 11. Is there anything but the pressure of the water which holds the butt end of Fisher's nozzle pipe against the bearing?

Ans. Nothing, sir; it is held by the pressure of the water; when the water is off it is loose.

Ques. 12. And if the power of the deflector was applied to the front end of the discharge pipe you think the power exerted there towards throwing one end of the butt of the pipe off of its bearing would be greater than the pressure of the water towards holding that bearing up in its place?

Ans. In most cases, if not all.

Mr. Boone: I object to all this testimony as irrelevant and immaterial.

159 Re-examination of Richard Hoskin by Mr. Boone:

Ques. 1. Did you not supply levers with Little Giant machines when you sold them?

Ans. Not for many years.

Ques. 2. When did you cease using levers on the Little Giant machines?

Ans. Oh, several years ago; I don't know just when. The lever was not for facilitating the movement of the machine; the lever was put on for another purpose.

Ques. 3. You moved them with the lever, did you?

Ans. Yes; but it was put on for another purpose.

Ques. 4. You quit using the lever when you got the deflector, didn't you?

Ans. Oh, years before.

Ques. 5. You could take hold of the discharge pipe of the Fisher machine and move it round, could you not?

Ans. You could move it round, but the water would squirt

160 out; it would cease to be a water-tight joint.

Ques. 6. It would squirt out from one side?

Ans. Yes, sir.

Ques. 7. But when you let go a discharge pipe the water would bring it back again and make the joint tight?

Ans. Yes; provided that trash hadn't got into the pipe, as was frequently the case.

Ques. 8. That was simply a disadvantage, was it?
Ans. Certainly.
Ques. 9. It did not prevent the machine from working, did it?
Ans. It leaked.
Ques. 10. Did it prevent it from working?
Ans. No; it would work, but it was a very imperfect machine.

By Mr. Wheaton:

Ques. 11. How does the weight of a Fisher machine of a given capacity compare with the weight of a Little Giant machine of the same capacity?
Ans. The Fisher machine is heavier.

161 By Mr. Boone:

Ques. 12. A deflector applied to the Fisher machine would operate the machine in the same way that it does the Little Giant, would it not, with the exception, as you say, that it would make it leak a little?
Ans. If a man could stand there without being washed away by the water that came out of the joint.
Ques. 13. Still it would operate in the same way?
Ans. It would, if the man could continue to hold on.

Testimony of Joseph Craig.

Examination-in-chief of Joseph Craig on behalf of respondents by Mr. Wheaton:

Ques. 1. Are you one of the defendants in this suit?
Ans. I am.
Ques. 2. Please state how many hydraulic machines of any kind you have sold since the 2nd day of September, 1879.
Ans. I have not sold any.
162 Ques. 3. Please state how many you have made.
Ans. I have not made any.
Ques. 4. Please state how many you have used.
Ans. I have used none.
Ques. 5. Is the defendant, R. R. Craig, now living?
Ans. He is not.
Ques. 6. When did he die?
Ans. He died on the 15th day, I think it was, or the 14th day of March, 1882.
Ques. 7. Are you one of the parties to the contract now in evidence as Respondents' Exhibit 1?
Ans. I am.
Ques. 8. Please state whether or not you have collected any royalties from parties for the use of the Fisher Hydraulic Chief on account of the patents owned by the defendants in this action?

(Objected to by complainant as irrelevant and immaterial.)

163 Ans. I have.
Ques. 9. When did you collect such royalties?

Ans. We commenced collecting them immediately after getting our judgment. Our first judgment was against Mr. Hoskin, I think. We followed it up more closely after getting a judgment against Fisher. It might have been along in 1871 or 1872; might have been as late as 1873. We collected royalties, I think, on every machine that Mr. Fisher made.

Ques. 10. What was the amount of the royalties which you collected off of each one of those Fisher machines on account of the patents owned by the defendants in this suit?

Ans. We collected on some upwards of $300, and on some that were pretty well worn out, where they expected to discard them and put in our machines, we collected from $50 to $150, and up as high as $300. Where there was no consideration except the royalty on the machine we generally collected the value of the machine—what the machine would sell for.

Ques. 11. When you say $300 and $150 what do you mean by that; on how many machines?

Ans. On a single machine.

Ques. 12. What was the highest royalty that you ever collected off of a single Fisher machine?

164 Ans. I think it was about $325, the most we ever made any one man pay.

Ques. 13. Were these royalties that you speak of paid by the parties without suit?

Ans. A great deal of the royalty that we collected was without suit. We sued some parties.

Ques. 14. How long, if at all, were you practically employed—familiar with the use of the hydraulic machines in use?

Ans. From the time I was old enough to work in the mines up to about 1872.

Ques. 15. When were you old enough to work in the mines?

Ans. I have worked in the mines ever since I was fifteen years old up until about 1872.

Ques. 16. How old are you now?

Ans. About 34.

Ques. 17. What experience, if any, have you had with single-jointed hydraulic mining machines?

165 Ans. I have had a great deal of experience. I got up and put on the market a single-jointed hydraulic machine in 1868 or 1869.

Ques. 18. What was that machine called?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. The Globe and the Victor. We made and sold somewhere from two hundred to two hundred and fifty of those machines.

Ques. 19. How many of those were Globe machines and how many of them were Victor machines?

Ans. I should think somewhere in the neighborhood of two hundred of them were Globes.

Ques. 20. What were the fifteen machines that are mentioned in this contract, Exhibit 1?

Ans. They were mostly Victors; there were some Globes among them. That is my recollection of it now.

Ques. 21. Do you know what single-jointed machine was used by Walter Craig in the Jenny Lind mine?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I think it was a Victor. We sent a Victor over there. If it was a single-jointed machine that was used there it was a Victor.

166 Ques. 22. How familiar were you ever with the use of two-jointed hydraulic machines?

Ans. I have worked them and seen them worked. In fact I know all about their working, as much as a man can know anything by practice.

Ques. 23. How does the working of a single-jointed machine compare with the working of a two-jointed hydraulic machine?

Ans. The Victor machine works as well as any hydraulic machine can work, and this Hoskin's Dictator was a splendid-working machine too—worked easy and worked well.

Ques. 24. How nearly did the two machines, the Victor and Dictator—resemble each other in construction?

Ans. They were almost identically the same. One had a ball top to it and the other a flange top. In one the packing was fastened on the flange and in the other it was fastened on the outside of the globe. The principle was the same.

Ques. 25. Are you familiar with the Fisher machine?

Ans. I am.

Ques. 26. Did you ever work one of those personally?

Ans. I have worked them; I never run a mine with one of
167 them in. I have been where they used and worked them—tried them.

Ques. 27. How does the working of the Fisher machine compare with the working of a single-jointed machine, either the Dictator or Victor?

Ans. I would rather have the Dictator than the Fisher machine to use. I think it is a better-working machine.

Ques. 28. What advantage has the Dictator or Victor over the Fisher machine?

Ans. It is a smoother and nicer working machine, and I think it throws a better stream of water. It is a lighter machine, too. The construction of the Fisher machine is about as poor as that of any machine that was ever put in the mines.

Ques. 29. In what respects?

Ans. It is a very clumsy kind of a machine, works hard unless you put the rod in it, and the front joint is so constructed that the passage of the water is cut down to a very small circle; makes it a very clumsy mining machine to work.

Ques. 30. How does the weight of the Fisher machine compare with the weight of the Little Giant machine, where they are both of the same capacity?

168 Ans. The Giant is a much neater, nicer machine and a lighter machine.

Ques. 31. About how much lighter is a Little Giant machine that would have a six-inch nozzle at the outlet than a Fisher machine having the same sized nozzle?

Ans. I don't think, the way we used to manufacture them—I don't think the Giant will weigh more than two-thirds as much as the Fisher machine, if it weighs that much; I mean the Fisher machine complete, ready for work. Take the improvements we made in mining machinery at the time of the Fisher machine and I don't think they would sell at all. I don't think they are any account—that is, including the patent we bought—the Macy and Martin patent.

Mr. Boone: We object to all testimony regarding the Fisher machine as irrelevant and immaterial.

By Mr. Wheaton:

Ques. 32. What, in your judgment, is the value of any and all advantages which have been derived by the defendants or either of them in manufacturing, using, or selling two-jointed machines as compared with the advantages they would have derived if they had manufactured, used, or sold either the Victor or the Dictator machine?

Ans. We could have sold as many Dictators or Victors as we did Little Giants if we had gone on manufacturing them, and we would have made as much money, I think, on those machines
169 if we had made them in place of the others.

Ques. 33. Do you know what the reason was for manufacturing the two-jointed machines instead of the single-jointed machines on the part of the defendants or either of them?

Ans. We got to drifting into the manufacture of them from patterns that Mr. Hoskin had; he had really the management of the whole thing—more than the rest of us—building up those patterns and making them; kept drifting along that way; kept making more Giant patterns than any other kind; that was a matter of a good deal of expense to us—getting up patterns; then the Giant is a very good machine and gives satisfaction; it is a very nice machine, and by the use of a bolt in it coupling in thay way instead of as Fisher did it took off a good deal of weight and made a neat, nice machine.

(Complainant- objects to the last question and moves to strike out the answer on the ground that it is irrelevant and immaterial.)

Ques. 34. Who invented and applied to hydraulic machines this bolt for holding the lower joints together?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. R. R. Craig and myself were the inventors. I mean to say by that that we were the first to introduce the bolt into
170 double and single jointed machines both.

Ques. 35. By the bolt do you mean that bolt referred to?

Ans. The bolt that takes off the friction; yes. I think we got

Fisher to go up with us to the Little York mine. He was a machinist, and we took him up there to drill the hole in the machine, and put the first one in the Globe nozzle. We also made and put one in a large goose-neck or Allenwood machine in the Manzanita claim.

Ques. 36. How early was that?

Ans. That was about 1869. Then the next one that was put in was put in by Mitchell in about 1869 or 1870, in Coyote Hill, Nevada county. We commenced making them and putting in machines from that time on.

Ques. 37. Has there been any money value to the defendants or either of them in either manufacturing or selling two-jointed machines instead of manufacturing or selling either the Dictator or Victor or Clipper single-jointed machines?

(Objected to by complainant- as calling for an opinion of the witness, when it has not been shown that he has any basis for forming an opinion.)

Ans. I think we could have sold as many of the single-jointed machines as we did of the double had we gone on manufacturing them. 171

Ques. 38. (Question 37 repeated.)

Ans. I think not. I think we would have sold the same number of single-jointed machines had we manufactured them.

Ques. 39. Do you know whether you could have made the same profit on the single-jointed machines which has been made on the two-jointed machines?

Ans. We did make about the same profit on those single-jointed machines that we made and sold—that is, the Dictator and Victor.

Ques. 40. You never had anything to do with the Clipper, did you?

Ans. No; I never had anything to do with that. I have seen the machine, though. It is a good machine.

Ques. 41. Have the single-jointed machines, the Dictator and Victor & Clipper, been open to the defendants to manufacture and sell all the while?

Ans. Yes, sir; they have. There has been no reason why they could not have manufactured them.

Ques. 42. Have there been any patents held by other persons besides the defendants which covered any part of those single-jointed machines—that is, the Dictator or Victor or Clipper? 172

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I think not.

Cross-examination of Joseph Craig by Mr. Boone:

Ques. 1. How many of these Little Giant machines did you ever sell, Mr. Craig?

Ans. I couldn't tell you. We were making machines right along from the time we entered into that contract up until about November, 1878.

Ques. 2. Did you make them or did somebody else make them?

Ans. I had them made up until November, 1878.

Ques. 3. Who made them for you?

Ans. Part of the time, H. B. Williamson; part of the time they were made at Mr. Hoskin's foundry. He really made them.

Ques. 4. Did you have anything to do really with the manufacture of those machines between the date of this contract, Exhibit 1, and the present time?

173 Ans. I manufactured machines up until about November, 1878.

Ques. 5. What do you mean by saying you manufactured them? Did you do it personally or did you have it done for you?

Ans. I had them manufactured; filled all the orders that Mr. Hoskin had. He took general charge of the business.

Ques. 6. Who did the selling of those machines?

Ans. Mr. Hoskin.

Ques. 7. All you did was to furnish the machines to Mr. Hoskin when he furnished the order?

Ans. Yes; up to 1878.

Ques. 8. Since that time how is it?

Ans. About that time we concluded that he would take charge of the manufacturing of the machines and simply pay me a royalty for the use of the patents that I owned on what he sold.

Ques. 9. Since that time he has both made and sold the machines, has he?

Ans. Yes; I suppose so.

174 Ques. 10. Did you have anything to do with taking orders and selling the machines?

Ans. Not since about April, 1878. I want to make a correction. By November, 1878, I mean November, 1877; I went from Sacramento to Wheatland in April, 1878, and it was before I went to Sacramento that we really agreed on this change.

Ques. 11. What did you have to do with taking orders before April, 1878?

Ans. I sold all the machines I could; looked after it to a certain extent.

Ques. 12. I thought you just said that Mr. Hoskin looked after the selling of the machines?

Ans. He did, but whenever I could get an order down here I would take it and sell it.

Ques. 13. Down here in San Francisco?

Ans. Yes, sir; I was living here at that time.

Ques. 14. From whom did you take the orders?

Ans. Miners, and sometimes from merchants.

175 Ques. 15. Sometimes from merchants who ordered for miners?

Ans. Yes, sir; but since October, 1871, I don't think I have taken an order for a machine or had anything to do with a sale of a machine.

Ques. 16. How frequently did you get orders before that?

Ans. Frequently.

Ques. 17. What proportion of the machines that were sold did you get orders for?

Ans. Well, I couldn't tell you. We sold a great many machines here; my father and I sold a great many; and then, after I bought him out—I bought him out in 1876—he took orders sometimes, and he would send them to the foundry.

Ques. 18. Did you ever canvass for the machines yourself?

Ans. Not since about 1874.

Ques. 19. So that you don't know anything about the condition or use of the machines in the mine since that time personally, do you?

Ans. I have been in the mines, but I was in the mines on other business. I have not worked as a miner since about 1875.

Ques. 20. Do you know about the state of mines on the
176 coast since that date, as to the use of hydraulic machines?

Ans. No; I have not moved much around amongst them; of course I know just as well how they work to-day as I did then.

Ques. 21. Then when you stated you thought that the single-jointed machines would have sold just as well as two-jointed machines you merely stated that as your opinion, did you?

Ans. I stated it from the fact that we made and sold lots of them.

Ques. 22. When was it that you made and sold lots of them?

Ans. We sold lots of those machines up to about 1875.

Ques. 23. After the Little Giant began to be in use how many single-jointed machines did you sell?

Ans. I couldn't tell how many have been sold since that time.

Ques. 24. Did not the Little Giant machine take the place of all other machines in the market?

Ans. I think there was more of them sold than anything else; I think they were put on the market stronger than all others.

Ques. 25. You purchased the Allenwood patent, did you, Mr. Craig?

Ans. Yes, sir.

177 Ques. 26. How much did you pay for it?

Ans. About $350, I think, we paid for the patent. We spent a great many thousands litigating it.

Ques. 27. How much did you pay for the Macy and Martin patent?

Ans. Two hundred and fifty. We spent about forty-five thousand dollars litigating that through.

Ques. 28. Has there been any machine manufactured and placed on the market since September, 1879, except those manufactured by the defendants in this case?

Ans. I don't know of any. I don't really know about what has been going on since about 1878, Mr. Boone.

Ques. 29. What amount of royalties did you collect since September 2nd, 1879, on the Little Giant machine?

Ans. I could not tell you.

Ques. 30. Can you ascertain the amount and give it to us?

Ans. I could ascertain the amount by going home to Woodland and examining books. I intended to bring them down, but I forgot it.

178 Ques. 31. Will you produce that amount?

Ans. If I can send it down without coming back here I will give you the amount; swear to it before a notary public, if you will accept that.

Ques. 32. You will accept Mr. Hoskin's statement as to that, as he takes it from his books, will you?

Ans. Yes, sir.

Ques. 33. What was it that you collected royalty for on the Fisher machines?

Ans. We collected royalty on the Macy and Martin patent. I collected royalty on one or two machines on the rod.

Ques. 34. You say you collected off of one Fisher machine three hundred and twenty-five dollars royalty?

Ans. Yes, sir; I think that was the amount.

Ques. 35. What was the size of that machine?

Ans. That was one of the large machines?

Ques. 36. What was the original price for that machine?

Ans. I think that they sold for about three hundred dollars.

179 Ques. 37. So you collected a larger amount of royalty than the original cost of the machine, assuming what is not proved?

Ans. Yes, sir.

Ques. 38. Why did you strike that man for three hundred and twenty-five dollars?

Ans. He was a man that we didn't have any conscientious scruples in charging all that the machine was worth.

Ques. 39. He preferred to keep the Fisher machine and pay three hundred and twenty-five dollars, twenty-five dollars more than it was worth, rather than take one of yours?

Ans. I don't know about that. I don't think we would have sold him one. He was a man we didn't like very much.

Ques. 40. He could have sent some one else to buy one, could he not?

Ans. Yes; he might. The new machine would cost him three hundred dollars, besides putting it in.

Ques. 41. How many such men did you strike?

Ans. We struck one mine, up in Calaveras county, which paid us twelve hundred and fifty dollars royalty on four Fisher machines.
The theory that we adopted to go by was to take what our
180 Globe machines cost in the shop ready to go out—we were
selling at about the same price that the Fisher machine was
sold for—and we would charge about the difference between the cost of the Globe machine to us and the selling price of it.

Ques. 42. That is to say, you would charge your profits as royalty?

Ans. Yes, sir; that is the theory we adopted and which we acted on. Sometimes we would find a machine that was pretty well worn out or where they wanted a whole lot more machines, and then we would make a compromise and take a little under those terms. We adopted as the royalty the difference between the cost and selling price of the machine; we adopted that royalty for the Macy and Martin patent. I don't think there was a Fisher machine that got away from us; I don't know of one.

By Mr. **Wheaton**:

Ques. 43. What do you mean by that last expression?

Ans. I mean we got a royalty on all of them.

Ques. 44. I will enquire whether or not you paid Mr. Hoskin his twenty-five per cent. of the amount collected by you off of the Fisher machines as provided for in the contract, Exhibit 1?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I did.

181 (Continued, by consent, until Saturday, December 2nd, at ten o'clock a. m.)

SATURDAY, *December 2nd*, 1882.

Present: Mr. Boone, solicitor for complainants; Mr. Wheaton, solicitor for respondents.

Testimony of John Patterson.

Examination-in-chief of JOHN PATTERSON on behalf of complainants by Mr. BOONE:

Ques. 1. Please state your name, age, place of residence, and occupation.

Ans. My name is John Patterson; my age, forty-nine years; my place of residence, San Francisco, and I am at present United States deputy naval officer.

Ques. 2. Have you had any experience in hydraulic mining, Mr. Patterson?

Ans. Yes, sir; some.

Ques. 3. Where and when?

Ans. In Nevada county, at various times for the last twenty-five years.

182 Ques. 4. Have you had anything to do with these hydraulic mining machines, such as the Little Giant?

Ans. I have seen a great many of them in use.

Ques. 5. Did you ever use any?

Ans. Well, claims of which I had charge used Little Giant machines.

Ques. 6. What other hydraulic mining machine have you used?

Ans. The first machine that I used was the Allenwood.

Ques. 7. Which was the next one?

Ans. The next one, I think, was the Little Giant.

Ques. 8. Did you ever use a single-jointed machine?

Ans. No, sir; I have seen them used.

Ques. 9. Where did you see them used?

Ans. I have seen them used in Moore's Flat and Omega, and various places. I could not tell you the names of all the places. I have seen a great many of them in use.

183 Ques. 10. Where was that that you saw those single-jointed machines in use—before or after you saw the Little Giant in use?

Ans. Before, generally. I saw one single-jointed machine used two years and a half ago or three years ago, called the Watson machine.

Ques. 11. You say you have never used them practically yourself, neither single jointed nor double jointed.

Ans. No; have never handled them myself. I was secretary of the Eureka Lake and Yuba Canal Company, in Nevada county, and the company used probably a dozen of them, different kinds. I couldn't tell how many exactly.

Ques. 12. You understand the construction and mode of operation of both of these machines, do you?

Ans. Yes, sir.

Ques. 13. What is your opinion as to the comparative utility and value of the single-jointed machine and the double-jointed machine?

(Objected to by respondent on the ground that the witness is not an expert; that he shows that he has never handled the two different machines, and consequently cannot know what the difference is or whether or not there is any difference.)

Ans. My recollection of the matter is that all the single-jointed machines were discarded on account of difficulty in their turning. Their work was good, but the operation of turning them
184 round was difficult; the friction was great. The wheels on
the Watson machine, the pressure being so great in one place, generally they would chip the bed on which they were rolled, and then they could only turn them a short distance horizontally. They could turn them up and down as much as they wanted to, but they could only turn them a short distance horizontally.

Ques. 14. So that their lateral movement was limited?

Ans. Their lateral movement was limited. That was the difficulty with the one that I saw two or three years ago—two years ago last summer. It was discarded on that account.

Ques. 15. Did that difficulty on account of the friction make it very objectionable?

Ans. You mean in regard to turning it round?

Ques. 16. Yes.

Ans. Yes; it was a very difficult matter to turn them round.

Ques. 17. How about the stream that it threw?

Ans. I don't know but it threw as good a stream as the other machine. The general course of the stream from the time it left the main pipe would be about the same as it was in the other machine in the Little Giant. They blamed a good or bad stream to
185 a certain sharp turn in the pipe before the water left the
nozzle, and the later improvements on it straightened the machine out, so that the bend was not so great. The bend in the double-jointed machines was about the same as it was in the single jointed machines, in the first place.

Ques. 18. You were familiar with a large number of hydraulic mines about that time, were you, Mr. Patterson?

Ans. Well, I have been familiar with nearly all the hydraulic mines in Nevada county for the last twenty years.

Ques. 19. Do you know what the general opinion of hydraulic miners with regard to single and double jointed machines has been during that time?

Ans. I think that the general opinion has been favorable to the Little Giant machines.

Ques. 20. How has it been towards the single-jointed machines?

Ans. There is a great many of those machines, apparently in good order, laying round on the bed rock on the various claims through the country.

Ques. 21. What machine has been most generally used within the last ten years, the double-jointed or the single-jointed machine?

186 Ans. Double-jointed machines. I don't know of but one single-jointed machine—the one that I spoke of—being used in the last ten years.

Ques. 22. There is a large number of these hydraulic mining machines in use in this State?

Ans. Yes, sir.

Ques. 23. What machine took the place of the single-jointed machine?

Ans. The Hoskin machine, or Little Giant, took the place of the others nearly entirely.

Ques. 24. By the Hoskin machine do you mean the single-jointed Hoskin machine or the Little Giant machine?

Ans. The Little Giant machine.

Ques. 25. That is the Hoskin machine that you refer to?

Ans. Yes, sir.

Ques. 26. And that machine has taken the place of the single-jointed machines, has it, and driven them out of the market?

Ans. Entirely so, to the best of my knowledge.

187 Cross-examination of JOHN PATTERSON by Mr. WHEATON:

Ques. 1. Did you ever know the double-jointed machine called the Fisher Hydraulic Chief?

Ans. Yes, sir.

Ques. 2. Which was the easier to turn, the Fisher Hydraulic Chief or the single-jointed machine?

Ans. I think that the Fisher machine was the easier to turn. There was but very few of them in use.

Ques. 3. Suppose there had been no lever purchase other than the nozzle of the Fisher machine to assist in turning it, then which turned the easier, the single-jointed or the Fisher machine?

Ans. I think that the Fisher machine turned the easiest.

Ques. 4. Do you know how that was?

Ans. No, I could not say positively how that was.

Ques. 5. Was it not a fact that Fisher always used a long lever to turn his machine, whereas the single-jointed machines were turned without a lever?

188 Ans. I think some of the single-jointed machines were turned with a lever. I put a lever on one of them myself

before either the Fisher machine or the Little Giant machine was made. I used it on an Allenwood machine before either of them were made.

Ques. 6. When you put your lever on that single-jointed machine then which turned the easier, the Fisher or the Allenwood machine?

Ans. I never saw a Fisher machine as small as the other was made. I think in turning them the Fisher machine would turn easier than the single-jointed machine, the Victor, or some name of that kind, because the one worked on a square face, the lower joint for turning round worked on a square face, and the other worked with a globe, as it were, in a packing, so that there was more friction. I can't say of my own knowledge which turned the hardest without the lever, for I never saw a Fisher machine turned without a lever, and don't know that I ever saw a Victor turned with the lever.

Ques. 7. What kind of single-jointed machine was it that you put a lever on?

Ans. The Allenwood.

Ques. 8. Then you never put a lever on a single-jointed machine?

Ans. The Allenwood was a single-jointed machine.

Ques. 9. Didn't the Allenwood have two joints—that is, one
189 upper joint of canvas and the other a metallic joint?

Ans. It had a flexible nozzle.

Ques. 10. How did they get the up-and-down motion—the Allenwood?

Ans. With the flexible nozzle.

Ques. 11. Then that had a flexible upper joint, did it not?

Ans. Well, you might call it a joint.

Ques. 12. The canvas was a connection, was it not, which joined the nozzle of the Allenwood with the balance of the machine?

Ans. Yes, sir.

Ques. 13. That made it a joint, did it not?

Ans. We would not naturally call it so, but it took the part naturally of a joint. It was in the nozzle instead of being back. It answered the same purpose as a joint.

Ques. 14. Do you know of your own knowledge which turned the easier, the Fisher machine or the Victor?

Ans. No; as I say, I never saw the Fisher work without the lever and never saw a Victor with one, I think.

190 Ques. 15. Then, taking the Fisher machine with a lever and
the Victor without a lever, did not the Victor turn as easy as the Fisher machine?

Ans. I couldn't say, except in a speculative manner.

Ques. 16. This Watson machine which you say was chipped had been in use for some ten years or more, had it not?

Ans. I guess it had not been used for ten years, and then it was bought by the company who owned the claim. I am not sure where they got it; but it was a new company that opened the claim two years ago last summer, and they got one of those Watson machines. It only had two rollers round the bed, and they wore on the bed that they traversed so that in a short time they could only get a short lateral motion. They could get all the motion up and down that they wanted.

Ques. 17. It would take a good many years' wearing to get it in that condition, would it not?

Ans. No; the rollers are very small and the great pressure cuts into the cast iron. Probably, if it had been made with a steel bed there, it would have lasted a long time, but being made of cast iron it cuts in easy.

Ques. 18. Are there not several single-jointed machines in use at Chalk Bluffs, in Nevada county?

191 Ans. I don't know of any; there may be.

Ques. 19. I refer to the Duryea claims.

Ans. I don't know whether there are or not; I have not been on the Duryea claim for five or six years.

Ques. 20. Were they using them there when you were there last?

Ans. I don't remember; I don't know what they were using. I would state here that I never made it a point to notice particularly what machines they were using when I went into mining claims.

Ques. 21. The bend through the Fisher machine was just about the same as the bend through the Allenwood machine, was it not?

Ans. Yes; the bend was straight-in the Fisher machines—that is, more abrupt, the bends in the machines—than they are in the later machines that they use now.

Ques. 22. By the later machines you mean the Little Giant?

Ans. Yes, sir.

Ques. 23. Did the Fisher machine ever, to your knowledge, drive any single-jointed machine out of the market?

192 Ans. Well, I couldn't say. I never saw but very few Fisher machines in mining claims.

Ques. 24. When was the last time that you ever saw a Fisher machine at work?

Ans. I think I saw a Fisher machine working, last summer was a year, in the Manzanita claim near Nevada City.

Ques. 25. The stream of water which passed through such single-jointed machines as the Dictator and Victor went more nearly in a straight line, did it not, than the streams that went through the Fisher machine and the Allenwood machine?

Ans. I am not positive in regard to that. The question with the miners on the straightness of a stream generally—they gave the credit of a good stream generally to the rifles that they had in the pipe, and Fisher made some of his without those rifles in. I think he was enjoined from using them, or something, I could not tell you what; I think that he was enjoined from using those rifles, and without those rifles they could not use the machine; that is my recollection of the matter.

Ques. 26. I had reference to the direction of the stream going through the body of the machine—going through the bends of the machine.

Ans. Through the Victor and Dictator—that is, the single-jointed machine made by the Craigs—I think probably they were a little straighter. They could have been made straighter than 193 the Allenwood and Fisher, and I think they were. I think there was less bend in them; that they were more of the shape of the present Little Giant.

Ques. 27. Then the fact of putting the two joints in a machine did not enable the maker to have the stream pass more nearly straight through the machine than it did in single-jointed machines, did it?

Ans. No; I don't think it did.

By Mr. BOONE:

Ques. 28. Did the two-jointed machine remedy the difficulties found by hydraulic miners in those single-jointed machines, Mr. Patterson? You spoke about chipping and the difficulty of moving them round.

Ans. It was so understood among miners. We bought those double-jointed machines in preference to the single-jointed machines. In fact, we would not buy a single-jointed machine at all.

By Mr. WHEATON:

Ques. 29. Is it not a fact that the single-jointed machines were out of the market, for the reason that the Craigs and Hoskin had a perfect monopoly—owned the patents under which these machines were made, including that rifle patent?

Ans. I think that if you had probably tried to get a new one of those single-jointed machines they would have been out of the
194 market. I think there were many old ones that you could get cheap. I have seen them lying idle in many claims.

By Mr. BOONE:

Ques. 30. Is not that true of anything? Is not that true of many kinds of machines, that they were lying idle for the reason that they were not worth the trouble of transportation and repairs? Is not that due to another reason, that the former machines made, including the Allenwood, the Dictator, and such machines, were made much smaller than the later machines, and that hydraulic miners would purchase the machines that threw much larger streams of water, and for that reason were obliged to purchase Little Giant machines?

Ans. That was the case with the Allenwood. I never knew any of those that were made large enough to supply a heavy stream. Some of those Victors were made of good size, many of them as large as those used to-day.

Ques. 31. How do you mean by that?

Ans. I mean to say that the Victor—if that is the name—many of them were made as much as ten or twelve or fourteen years ago; that there are many Little Giants made as small to-day as they were—that is, they were made up to a five or six inch nozzle.

By Mr. WHEATON:

Ques. 32. Do you know of a single mining claim where there was a Victor machine laid aside and a Little Giant of the same capacity put in its place to do the work?

195 Ans. No; I could not name any.

Ques. 33. Do you know of any instance where that was done without being able to name the mine?

Ans. No; I don't.

Ques. 34. Then, so far as you know, the Victor machine held its place right alongside of the Little Giant machine of the same capacity?

Ans. I don't know that I ever saw the Victor machine used alongside of the Little Giant. I believe I have, too, but I am not certain about that.

By Mr. BOONE:

Ques. 35. Do you know the characteristics of the different single-jointed machines, Mr. Patterson, sufficiently to distinguish them by their names, such as the Victor and Dictator?

Ans. Not by name, but I think I understand from the names that you have given me since I *can* here one from the other. The Allenwood was a square joint, merely a lateral movement. I think the Dictator—I am not certain—was a regular globe joint, with one socket fitting inside of the other, something in the shape of the old fire-engine hose that used to stand on top of the hand engines. I am not sure of the name of the machine, but that was the first machine that the Craigs made. I don't know what they called it.

196 By Mr. WHEATON:

Ques. 36. It is proved in this case that the machine which the Craigs made, that you speak of, is called the Globe machine.

Ans. Then that was the Globe machine. Then they came with one that was set in a different shape and worked with a packing, and that was the Hoskin machine, we called it.

Ques. 37. That was the Dictator?

Ans. We called that the Hoskin machine. Then came the Little Giant, and we called that the Hoskin machine.

Ques. 38. How did the Hoskin single-jointed machine, the Dictator, compare with the Fisher machine as to power which was required to turn it, if you know?

Ans. I explained that awhile ago, that I never saw the Fisher machine worked without the lever and I never saw the Victor worked with the lever, so I don't know the comparative ease with which they could be moved.

Ques. 39. Is it not pretty strong evidence, in your opinion, that the Victor machine moved much more easily than the Fisher machine; the fact that the Fisher machine was always turned with a lever while the other was turned without a lever?

Ans. No; it would not be evidence to me, because, as I told you, I used a lever on the Allenwood machine, a much smaller machine, long before either of them made their machines. 197

Ques. 40. There were some two hundred or more of those Allenwood machines used, in general use, were there not?

Ans. I don't know anything about the number of them. I don't anything about how many were made.

Ques. 41. They worked well, did they?

Ans. They worked first rate.

By Mr. BOONE:

Ques. 42. The Allenwood machine went out of use when the Little Giant went into use, did it not, Mr. Patterson?

Ans. Yes; I have never seen any in use after 1869, I think.

Testimony of James B. Patterson.

Examination-in-chief of JAMES B. PATTERSON on behalf of complainants by Mr. BOONE:

Ques. 1. Please state your name, age, place of residence, and occupation.

Ans. My name is James B. Patterson; my age, thirty-nine years; my place of residence, Oakland, and at the present time I am employed in the United States mint.

198 Ques. 2. Have you ever had any experience in hydraulic mining?

Ans. Yes, sir.

Ques. 3. Where and when?

Ans. Well, from 1862 down to two years ago, in Nevada county and Placer county.

Ques. 4. You understand the construction and operation, do you, of hydraulic mining machines?

Ans. I do, to some extent.

Ques. 5. Have you ever had any practical experience in operating them?

Ans. Yes, sir; I think I have operated nearly all the different machines that have been introduced for the purpose of mining.

Ques. 6. You know the single-jointed machines in use at one time, do you?

Ans. Yes, sir.

Ques. 7. You know the Little Giant machine?

Ans. Yes, sir.

199 Ques. 8. You say you have handled and operated both of these machines, do you?

Ans. Yes, sir.

Ques. 9. In your opinion, Mr. Patterson, which of these two machines possesses the most advantages and the most value as a hydraulic machine?

Ans. The Little Giant, in my opinion.

Ques. 10. How long has the Little Giant machine been in use?

Ans. The Little Giant machine, I presume, has been in use from ten to twelve years.

Ques. 11. When was the single-jointed machine in use?

Ans. The single-jointed machine was in use before that time.

Ques. 12. Then the single-jointed machine was superseded by the two-jointed machine, was it?

Ans. Yes, sir.

Ques. 13. Which was the easiest machine to operate?

Ans. I think the two-jointed machine was much the easiest to operate.

200 Ques. 14. Which of them threw the best stream?

Ans. The Little Giant, as a general mining machine, throws the best stream.

Ques. 15. Do you know of any single-jointed machines that have gone into use in the last ten years?

Ans. I do not; I couldn't say that I know of any.

Cross-examination of JAMES B. PATTERSON by Mr. WHEATON:

Ques. 1. In what respect did the Little Giant throw a better stream than the single-jointed machine?

Ans. Well, it threw a more solid stream, for one thing, in the different positions. All machines do not throw the same stream, even of the same make. There are some Little Giants that will throw a much better stream than other Little Giants.

Ques. 2. Was that also true of the single-jointed machines?

Ans. The single-jointed machine threw a very good stream in a direct range.

Ques. 3. What machine do you refer to when you speak of
201 the single-jointed machine?

Ans. I speak now of the Dictator. The Allenwood and the Monitor or Globe machine—the Allenwood was not considered a success; neither was the Monitor, which was also called the Globe.

Ques. 4. How do you mean that the Allenwood was not considered a success? Were there not over two hundred of them sold which went into successful and practical use?

Ans. I don't know whether there was two hundred; I don't know but what there was a thousand. I am speaking only of my knowledge of the machines.

Ques. 5. Didn't the Allenwood machine go into practical use and do good work?

Ans. I believe it did, as a first introduction.

Ques. 6. Was it not the best machine then in use?

Ans. It was considered so by many miners. I have heard it spoken of as the best machine in use at the time when it was in use.

Ques. 7. Then what do mean by saying it was not considered a success when it was in use?

Ans. Well, it was a success in the mines of certain men in
202 certain places. I can illustrate that matter in this way, that
there are men who hold to-day that the old hose first used, before the Allenwood was introduced, is the best in the world for a hydraulic mining machine on a small scale.

Ques. 8. I still do not understand what you mean by saying that the Allenwood was not considered a success since it went into general use, and you say it did good work and was considered the best machine then in use?

Ans. Well, I say so for another reason, for I have seen them laid aside and the hose introduced in their place.

Ques. 9. Do you mean to say that the Allenwood machine was not as good as the hose for hydraulic mining?

Ans. It was, I say, in certain places; that is all owing to the opinion of the men using it.

Ques. 10. Did you ever see the Dictator machine laid aside and hose substituted in its place?

Ans. No, sir.

Ques. 11. Did not the Dictator throw just as good a stream as any two-jointed machine of the same size that you ever used?

Ans. No, sir.

203 Ques. 12. In what respects did it fail to do so?

Ans. The Dictator throws a very nice stream when pointed with the pipe—I mean parallel with the lead of the pipe—a smooth stream; but when you change the Dictator around to the side it changes it—throws a more broken stream, more twisted stream.

Ques. 13. Was not the stream controlled almost entirely by the device called the rifles used in the nozzles of the machines?

Ans. I think myself that the rifle has a great deal to do with straightening the stream.

Ques. 14. In your opinion, didn't the rifles have pretty much all to do with it?

Ans. Well, no; not all.

Ques. 15. Do you know of any one of the machines that you have named that could be successfully used without the use of those rifles?

Ans. Yes; they could be successfully used, but they will not throw as good a stream; they were successfully used.

Ques. 16. Please give the name of any one of the machines which you have named which you saw continuously used in any mine without the rifles.

204 Ans. I have never seen one.

Ques. 17. Then what do you mean when you say they were successfully used?

Ans. Before the rifle was introduced as an experiment in the Little Giant or the Dictator.

Ques. 18. Which ones of these machines, other than the old hose, was ever used successfully before the rifles were introduced, to your knowledge?

Ans. Both the Dictator and Little Giant and Monitor.

Ques. 19. (Question 18 repeated.)

Ans. I say both of those machines—the Giant and Dictator.

Ques. 20. Do you mean the Giant?

Ans. Yes; I mean the Giant.

Ques. 21. Where did you ever see a single one of those Little Giants made or used before the introduction of the rifles?

Ans. I never seen them made, but I seen them used at Gold Run, Placer county.

Ques. 22. Please reflect a moment and see if you are not
205 getting things considerably mixed as to the use of any of these machines without rifles. The evidence so far shows that

there was never a Little Giant made until long after the rifle was used in those machines.

Ans. I am aware of that, sir. I am aware of the rifle being used in other machines before it was used in the Little Giant or Dictator.

Ques. 23. In whose claim at Gold Run did you ever see a Little Giant used without rifles in it?

Ans. I don't believe that I said that I saw a Little Giant used in those claims. When Mr. Hoskin first set up the Giant, his new machine, as he called it, he had no rifles at that time. He soon afterwards went to experimenting on that and put rifles in; the rifles were soon introduced.

Ques. 24. Does your last answer apply to the Little Giant or only to the Dictator?

Ans. I think it applies to both. I wouldn't want to be positive about the Little Giant, because the Little Giant came after the Dictator.

Ques. 25. When was the last — that you ever saw any of the single-jointed machines in use?

206 Ans. I have seen single-jointed machines in use within the last three years.

Ques. 26. Whereabouts?

Ans. At Buckeye Hill, Nevada county.

Ques. 27. How many of them?

Ans. One.

Ques. 28. What kind was that?

Ans. It was what they called the Dictator.

Ques. 29. When did you last see any single-jointed machine at work at Chalk Bluffs, Nevada county, if at all?

Ans. I don't think I have seen a single-jointed machine worked there.

Ques. 30. Do you know what kind of machines they are using there to-day?

Ans. When I was there three years ago—mining for Mr. Hayward—they were using Giants.

Ques. 31. Were they not using single-jointed machines there at that time?

207 Ans. No, sir; they was not, to my knowledge. I believe they had a single-jointed machine, but it was not in use. The mine was not running at that time that that machine was set up in.

Ques. 32. How many Giants did you have there?

Ans. I don't know how many Giants they had.

Ques. 33. Do you know the Duryea claim at Chalk Bluffs?

Ans. No, sir. I know where Duryea once owned a piece of mining ground at Chalk Bluffs.

Ques. 34. Is that the same claim that Rose used to run?

Ans. Yes, sir.

Ques. 35. When did you last see any single-jointed machines running there?

Ans. I could not say that I ever saw any running there. I have not been there for three years now and that claim was not worked when I was there. There may have been a single-jointed machine there; I don't know as to that.

Ques. 36. How much experience have you actually had in handling these machines yourself?

Ans. I have had several years.

208 Ques. 37. Did you ever work in the mines tending the machines?

Ans. Yes, sir.

Ques. 38. What mines were you in?

Ans. I worked in the mines at Quaker Hill, You Bet, Gold Run, Buckeye Hill.

Ques. 39. Did you ever work at Mr. Hoskin's mine at Indiana Hill, near Gold Run?

Ans. No, sir.

Ques. 40. Have you ever been there?

Ans. Yes, sir.

Ques. 41. What kind of machines did they use there?

Ans. I don't know what they are using there. At the time I was there they were not working anything. I had not been in that claim for ten or eleven years.

Ques. 42. How long have you been in the mint?

Ans. About eight months.

209 Ques. 43. Did you ever see the Fisher machine?

Ans. No, sir; never did.

Re-examination of James B. Patterson by Mr. Boone:

Ques. 1. Which was the first machine to supersede the old Hose?

Ans. I think what they called the Allenwood was the first, as near as I can recollect.

Ques. 2. That had some difficulties in its management, had it?

Ans. Yes, sir.

Ques. 3. And you didn't consider it a successful machine?

Ans. No, sir.

Ques. 4. Then what superseded the Allenwood?

Ans. The Craig Monitor, having an upper globe joint—the Craig machine.

Ques. 5. That took the place of the Allenwood, did it?

210 Ans. Yes, sir.

Ques. 6. About that time there were a number of single-jointed machines in the market, were there not—the Dictator and Victor & other machines?

Ans. There was a great many of these Allenwood machines, of course.

Ques. 7. Then what superseded the single-jointed machines?

Ans. The double-jointed machines.

Ques. 8. Then the Allenwood was the best machine in use at that time—that is, as the successor to the Hose?

Ans. It was considered an improvement by the general run of miners.

Ques. 9. It was one step, you considered, towards getting a machine?

Ans. Yes, sir.

Ques. 10. The Little Giant, then, was the best machine of all, was it?

Ans. Yes, sir.

Ques. 11. Has the Little Giant any of the difficulties that these other machines had?

211 Ans. No, sir.

Ques. 12. What feature in the Little Giant is it which makes it superior to the other machines?

Ans. It is less complicated—easier worked. There is less friction, & generally there is a better stream—considered.

Ques. 13. Does the upper joint figure in the success of the machine at all?

Ans. Yes, sir; because in that joint you have the elevation & depression—the motion up and down of the pipe without moving the main body of the other joint.

Ques. 14. What you mean by that is that the two motions are distinct?

Ans. Yes, sir.

Ques. 15. Without that upper joint, in your opinion, would the Little Giant be a successful machine?

Ans. No, sir.

Mr. WHEATON: We will admit that the Little Giant would not be a successful machine without an upper joint.

212 By Mr. BOONE:

Ques. 16. What feature in the Little Giant machine, Mr. Patterson, in your opinion, made it a successful machine—superior to all others?

Ans. The one feature is it is not complicated; it is very simple; it has got a short joint. The water does not come square against an elbow, but continues from the lead to the discharge pipe almost unmolested, almost directly. In the later Giants they are made in that shape to reduce friction. It is perfect almost as a mining machine.

Ques. 17. I refer to the construction of the parts of the machine.

Ans. The construction is very simple, and, as I have tried to describe it, it is not what you would term a square elbow, but reduces the friction.

Ques. 18. Suppose that in all respects the Little Giant was made as it is now, and its upper joint was not limited, so that it could move in every direction, like the Allenwood Hose, would you consider it a successful machine?

Ans. No, sir.

Recross-examination of JAMES B. PATTERSON by Mr. WHEATON:

213 Ques. 1. You say the construction of the Little Giant is simple?

Ans. Yes, sir.

Ques. 2. Is the fact of the second or lower joint being held together by a bolt one of the features of that simplicity of construction?

Ans. Yes, sir.

Ques. 3. Is it an advantage, in your opinion, to get rid of small cast-iron wheels in that joint for the purpose of making it turn easier?

Ans. Yes, sir.

Ques. 4. Is it any advantage to have the outlet of the discharge pipe as large as it can be as compared with the weight of the balance of the machine?

Ans. Yes, sir. Just repeat that.

Ques. 5. (Question 4 repeated.)

Ans. That is a question to be demonstrated by the weight of the machine. If you want to take into consideration the pressure, size of the pipe, it might be a question discussable.

Ques. 6. It is an advantage to have the outlet of the discharge
pipe as large as it can be, as compared with the inlet of the
214 pipe to the machine, so long as such outlet pipe is not too
large to get the full benefit of a full pressure of the water?

Ans. Yes, sir; I think it is.

Ques. 7. Would it be a disadvantage to the Little Giant machine if it was so constructed that it would have to weigh at least one-third more to obtain the same capacity that it now has?

Ans. No, sir.

Ques. 8. Would not the weight of the machine be a disadvantage?

Ans. No, sir; only in moving it; and that would be a very small disadvantage.

Ques. 9. What advantage would it be?

Ans. Well, it would be of advantage in respect to keeping it in its proper place; it would be stronger, providing rocks or anything would come through the pipe; they have to be made sufficiently strong to stand banging around—hard usage; so far as throwing a stream—so far as conveying the water—it would not make any material difference whether the machine was heavy or light, so long as it had the strength to stand the pressure.

Ques. 10. Do the Little Giants have sufficient strength for
215 all these purposes that you suggest?

Ans. Yes, sir.

Ques. 11. Then you think it would be an advantage to take the Little Giant as it is and cast one hundred and fifty or two hundred pounds more weight onto it, do you?

Ans. It is better in the way that I say, provided that a falling bank, for instance, falls upon it; it is not so likely to be mashed; that is the only advantage that extra weight could be.

Ques. 12. But suppose that in adding weight the machine was made longer and higher and with sharper bends in it, so that the castings were no thicker and no stronger than the castings of the Little Giant are now made, would such weight accompanied by such form added to the machine be an advantage or disadvantage, in your opinion?

(Objected to by complainant- as hypothetical and not based upon any knowledge which the witness has claimed to possess and as immaterial and incompetent.)

Ans. I don't understand the question. I don't know what weight on the end of the discharge of the pipe would have to do with the machine if it had a certain strength.

216 Ques. 13. Do you recollect the form and shape of the Allenwood machine?

Ans. Well, yes; I have some recollection of it.

Ques. 14. The joints in that were longer, were they not, than the joints in the Little Giant machine?

Ans. Yes, sir.

Ques. 15. The bends in that were shorter than the bends in the Little Giant machine, were they not?

Ans. Yes, sir; very abrupt.

Ques. 16. If you had an Allenwood machine with its orifices of the same diameter as those of the Little Giant, would it not be a greater weight of casting to construct it on account of the greater length of the joints?

Ans. Certainly.

Ques. 17. Would it be an advantage or a disadvantage to make the Little Giant in the same shape as the Allenwood machine as to length of the joints and sharpness of the bends?

(Objected to by complainants as immaterial and as calling for the opinion of the witness upon a proposition in regard to which he has not professed to be an expert, and as not cross-examination.)

217 Ans. I could give you my opinion about it.

Ques. 18. That is all I ask for.

Ans. It would be a disadvantage.

Testimony of E. P. Hubbard.

Examination-in-chief of E. P. HUBBARD on behalf of complainants by Mr. BOONE:

Ques. 1. Please state your name, age, place of residence, and occupation.

Ans. My name is E. P. Hubbard; my age, fifty-five years; I live in Nevada City, and my business is mining.

Ques. 2. How long have you been a miner, Mr. Hubbard?

Ans. I have been engaged in mining since 1850.

Ques. 3. What kind of mining?

Ans. Placer, quartz.

Ques. 4. Have you had much experience in what is known as hydraulic mining?

218 Ans. Considerable, sir.

Ques. 5. Experience in handling hydraulic mining machines?

Ans. I have.

Ques. 6. What kind of hydraulic machines have you handled?

Ans. All—from the Hose to the Little Giant; seen them all operated. I have not operated all of them, however.

Ques. 7. You are familiar with the construction of all the hydraulic mining machines, are you, including the Allenwood?

Ans. I don't know that I am—all of them; the Allenwood, I don't understand by that name.

Ques. 8. The Goose Neck?

Ans. Yes; I understand that machine.

Ques. 9. You understand the Goose Neck, the single-jointed machines, and the Little Giant?

Ans. Yes, sir.

Ques. 10. With how many different kinds of single-jointed machines are you familiar?

219 Ans. The Goose Neck, the Dictator, and the Craig or Globe is all, I believe.

Ques. 11. You call the Goose Neck a single-jointed machine, do you?

Ans. I do.

Ques. 12. The piece of canvas you do not consider as a mechanical joint, do you?

Ans. I do not.

Ques. 13. Which of these machines, in your opinion, Mr. Hubbard, is the superior machine, best adapted for mining purposes?

Ans. Well, I think the Little Giant is about perfect.

Ques. 14. What feature in the Little Giant is it which makes it superior to the other machines?

Ans. It is in the handling of the discharge pipe, elevating & depressing.

Ques. 15. What feature in connection with the elevating and depressing is it?

220 Ans. You elevate it to a much greater height and handle the discharge pipe much easier. We consider it always a great deal preferable for sweeping down, as we call it—brushing down, piping down, as was practiced a great deal about Columbia Hill, in Nevada county.

Ques. 16. What advantage was there in sweeping down with it?

Ans. You could handle it much easier.

Ques. 17. Why?

Ans. I don't understand why. I suppose it is on account of less friction.

Ques. 18. How many movements has the discharge pipe of the Little Giant machine?

Ans. Two.

Ques. 19. What are they?

Ans. Up and down.

Ques. 20. Has it any lateral motion?

Ans. No, sir.

Ques. 21. Is that any advantage in the construction of the

221 machine over and above the single-jointed machine?

Ans. Nothing more than you can lower it much more & easier.

Ques. 22. Which machines were the first in use?

Ans. The first that I saw was the Goose Neck.

Ques. 23. What machines superseded the Goose Neck?

Ans. I think the Craig came in then—the next one that I saw.

Ques. 24. The Craig was a single-jointed machine, was it?

Ans. Yes; the Globe.

Ques. 25. Which next?

Ans. The Dictator, I think, was the next I seen.

Ques. 26. Which next?

Ans. The Little Giant, as far as my knowledge goes.

Ques. 27. Since the Little Giant has been in use do you know of any single-jointed machines that were placed on the market—bought or sold?

222 Ans. I have seen them used side and side at the same time.

Ques. 28. But has there been any demand for single-jointed machines since the Little Giant machine has been manufactured and sold?

Ans. Not that I know of, sir.

Cross-examination of E. P. Hubbard by Mr. Wheaton:

Ques. 1. Where did you see the single-jointed and double-jointed machines used side and side?

Ans. Chalk Bluff.

Ques. 2. What claim?

Ans. It was in Hussey's claim.

Ques. 3. Which were the larger machines, the single-jointed or the double jointed?

Ans. The same size. I think they were the nine-inch inlet.

Ques. 4. Do you know whether that single-jointed machine had a ball on top of the lower elbow and had three wheels under
223 the flange?

Ans. No, sir; I do not.

Ques. 5. Do you know whether or not it was called the Globe machine?

Ans. I do not.

Ques. 6. How long were they running?

Ans. I don't know how long they were running, I am sure.

Ques. 7. How long were they running there side and side, to your knowledge?

Ans. I could not tell you. I was off and on there every week or so. I don't know how long they were running. I suppose they are using some of them there yet, for all I know. Mr. Hussey got a Little Giant from me and that I took up, and whether he had his Dictators there at that time I don't know; that was five years ago.

Ques. 8. Do you know whether that single-jointed machine and that double-jointed machine worked in that mine under the same pressure of water or not?

Ans. Well, I could not tell you whether it was under the same pressure or not.

224 Ques. 9. Could you see any difference in the two streams that were thrown from them?

Ans. I could not.

Ques. 10. Could you see any difference in working them?

Ans. Not particularly. Piping straight ahead, I don't see any difference in the two machines; the stream seems to be about as strong in one as in the other.

Ques. 11. Please explain a little further what you mean by sweeping down.

Ans. In working the surface ground they work it very fast and they get a long ways from the head of the flume—four or five hundred feet, perhaps—and in sluicing before they get ready to clean up they commence at the head and drive this all down through the flume.

Ques. 12. That is, wash this four or five hundred feet off?

Ans. Yes; and probably two or three hundred feet in width.

Ques. 13. In those single-jointed machines, such as the Dictator and the Clipper, the discharge pipe turned on two pivots, did it not, one on each side of the globe?

225 Ans. On a flange, I think. There were friction wheels, I would call them; I don't know what else.

Ques. 14. What was in the centre of those friction wheels? Were there not in the centre of each of those friction wheels the pins or pivots which held the discharge pipe there?

Ans. That I don't know particularly; I never examined one close enough to answer that question. I never saw one of the Dictator machines more than to have hold of the discharge pipe for a few minutes.

Testimony of John K. Parkinson.

Examination-in-chief of JOHN K. PARKINSON on behalf of complainant- by Mr. BOONE:

Ques. 1. Please state your name, age, residence, and occupation.

Ans. My name is John K. Parkinson; I am 59 years old; I live in San Francisco, and I am an engineer and machinest by trade.

Ques. 2. Are you acquainted with the complainant in this case, Mr. Frank H. Fisher?

Ans. Yes, sir.

226 Ques. 3. How long have you known him?

Ans. It must be nearly forty years; more than that.

Ques. 4. Did you ever do any work for Mr. Fisher?

Ans. Yes, sir; I have done work for him.

Ques. 5. When?

Ans. About ten years ago.

Ques. 6. Where?

Ans. At Nevada City.

Ques. 7. What kind of work?

Ans. The principal work was hydraulic machines.

Ques. 8. You assisted him in building his hydraulic machines, did you?

Ans. Yes, sir.

Ques. 9. Do you understand the construction of his machine?

Ans. Yes, sir.

227 Ques. 10. Are you familiar with the construction of other hydraulic machines?

Ans. Two or three others.

Ques. 11. What others?

Ans. The Allenwood or Goose Neck and Craig's Globe.

Ques. 12. Have you seen these machines in operation in the mines practically?

Ans. Yes, sir.

Ques. 13. Did you ever handle them?

Ans. I never handled them.

Ques. 14. Do you know which of these machines is the best machine for hydraulic mining?

Ans. I know which machine the miners have a preference for at the present time?

Ques. 15. Which one is that?

Ans. The Little Giant.

228 Ques. 16. What feature is it in the Fisher machine, the "Hydraulic Chief," Mr. Parkinson, which renders that machine superior to the Allenwood and single-jointed machines that you know?

(Objected to by respondent- on the ground that there is no evidence from this witness nor in the case that tends to show that the Fisher machine is any better than the single-jointed machines, assuming what is not proved; also on the ground that the witness has not used the machines referred to and is not an expert.)

Ans. The vertical motion is the principal feature.

Ques. 17. Vertical motion of what—the discharge pipe?

Ans. Yes, sir.

Ques. 18. Have you seen and examined the Little Giant machine?

Ans. I have not lately examined one close enough to tell anything about it.

Ques. 19. Did you ever examine one so as to know how it was constructed?

Ans. I have examined them years ago.

Ques. 20. You know how they were constructed, then, do you?

229 Ans. Yes, sir.

Ques. 21. What feature is there in the Little Giant machine that you find in the Fisher machine?

Ans. Simply the vertical motion.

Ques. 22. You do find that in the Little Giant machine?

Ans. That is in the Little Giant machine.

Cross-examination of JOHN K. PARKINSON by Mr. WHEATON:

Ques. 1. Did the Allenwood machine have a vertical motion?

Ans. It did not, excepting there was a hose attachment on the end of the pipe that they used for raising and lowering, but that was no joint.

Ques. 2. I did not ask you if it was a joint. I asked you if there was a vertical motion in the Allenwood machine?

Ans. No.

Ques. 3. No vertical motion at all.

230 Ans. None at all.

Ques. 4. Was there any vertical motion in the single-jointed machines?

Ans. There was a vertical motion in the Globe.

Ques. 5. Have you ever known one of those machines—the single-jointed or the Allenwood machines—in which there was not a vertical motion when they were used?

Ans. I don't know of any vertical motion in the Allenwood unless you call a hose a vertical motion.

Ques. 6. Did you ever see a single-jointed machine used in which there was not a vertical motion?

Ans. No; I don't know that I have—that is, calling the hose a vertical motion.

Ques. 7. Then the vertical motion itself does not make a machine?

Ans. No; not as they are constructed now.

Ques. 8. How long has it been since you have used any hydraulic mining machine?

231 Ans. I never used any hydraulic mining machine excepting the old Hose.

Ques. 9. Then from practical use you know nothing about any of these machines, do you?

Ans. No; only from seeing them work and building them.

Ques. 10. Do you know the reason why the Fisher machine went out of use?

Ans. I do.

Ques. 11. What was it?

Ans. Well, Craig had the use of the rifle, and Fisher could not use it. Of course, the rifle was a very important feature in the machine.

Ques. 12. It took a rifle, besides the vertical motion, at least, to make a machine, did it?

Ans. It took a rifle, besides the vertical motion—that is, to throw a straight stream.

Ques. 13. The Fisher machine was worth less, then, when the court compelled him to take the rifle out?

Ans. It was not what you would call worthless, but a su-
232 perior machine took the place of it.

Ques. 14. Which was the superior machine which took the place of it?

Ans. The Little Giant was the superior machine that took the place of it, with the rifle attachment and other improvements; I don't know what they were.

Re-examination of JOHN K. PARKINSON by Mr. BOONE:

Ques. 1. When you said the Allenwood machine had no vertical motion did you mean that it had no vertical motion whatever, or that it had no distinct, separate, vertical motion?

(Objected to by respondent- as leading.)

Ans. When I say it had no vertical motion I mean it had none in the metal joint.

Ques. 2. You say the Little Giant was a superior machine. In what regard was it superior to Fisher's?

Ans. The principal thing was in the longer elbow, if anything. I don't know of anything else that made it superior.

233 Ques. 3. It had rifles in it, had it not?

Ans. It had rifles in it; yes.

Ques. 4. Was there anything else besides the fact that the Little Giant machine had rifles in it that made it superior to Fisher's machine?

(Objected to by respondent- on the ground that the witness is not an expert.)

Ans. I don't think that there was anything.

By Mr. WHEATON:

Ques. 5. Explain what you mean by the longer joints in the Little Giant machine.

Ans. Well, take the Goose Neck, for instance; it had two short elbows, and the Little Giant had a longer one. Of course, the water passed through the longer elbow easier than it did through the short one.

By Mr. BOONE:

Ques. 6. That is, the water made a less bend in passing through the machine in the Little Giant than in the Goose Neck?

Ans. Yes, sir.

By Mr. WHEATON:

234 Ques. 7. The water made a less bend in passing through the Little Giant than in passing through the Fisher machine, did it not?

Ans. Yes, sir.

Ques. 8. The Fisher machine, so far as the bends and joints were concerned, was about the same as the Allenwood, was it not?

Ans. So far as the elbows were concerned it was.

Ques. 9. By a longer joint, then, you meant a longer turn in the joint, did you not?

Ans. A less abrupt turn.

Testimony of Richard Hoskin.

235 Re-examination of RICHARD HOSKIN on behalf of complainant- by Mr. BOONE:

Ques. 1. Have you calculated and have you with you the amount of royalty paid by you to the Craigs, defendants in this case, between September 2nd, 1879, and the present time?

Ans. I have.

Ques. 2. What is the amount?

Ans. Ten thousand and seventy-five dollars.

Ques. 3. To whom was that money paid?

Ans. To Joseph Craig. That was the amount of royalties for the use of patents owned by Craig as per agreement between myself and Craig; that would have been the amount, but on account of payments being made prior to the time when they would become due in accordance with the terms of the agreement there were certain discounts made at different times which amounted to three hundred and twenty-five dollars, so that the amount actually paid was three hundred and twenty-five dollars less than the amount I gave.

236 *Testimony of Frank H. Fisher.*

Examination-in-chief of FRANK H. FISHER on behalf of complainant- by Mr. BOONE:

Ques. 1. You are one of the complainants in this action, are you, Mr. Fisher?

Ans. Yes, sir.

Ques. 2. Patentee of the invention described in the Fisher reissued letters patent in evidence?

Ans. Yes, sir.

Ques. 3. Now, Mr. Fisher, state what you have been damaged by the action of the defendants in this case by reason of their infringement of your letters patent.

(Respondent- objects to the form of the question on the ground that it is an incompetent way of proving damages; that it is not competent for complainant to assess his own damages, but he must state the facts out of which the damages arises and leave the assessment of the damages to the master and the court.)

Ques. 4. State the facts in connection with your damages, Mr. Fisher.

237 Ans. The amount of damages, if I take Mr. Wheaton's amount that he acknowledges that they have made, one hundred and thirty-four thousand dollars, I have been damaged that much. That is one source of getting at it.

Ques. 5. I mean, Mr. Fisher, since the 2nd day of September, 1879, what have been your damages?

Ans. One hundred thousand dollars.

Ques. 6. State the facts upon which you base that estimate.

Ans. The facts are that the defendants in this case have been manufacturing and selling hydraulic machines embodying my patent and deprived me of that privilege by supplying the market and infringing my patent to the amount of fifty thousand dollars, and I have been damaged fifty thousand dollars by their reducing the price of the machine, lowering the price of the machine, to such an extent that there is no profit from the manufacture of it.

Ques. 7. What profits did you make on your machine, Mr. Fisher, when you were manufacturing it?

Mr. WHEATON: We object to that for the reason that when selling the machine Mr. Fisher sold with it the rifles covered by patents of respondents' and other patented devices which constituted no part of his invention and of which he was not the owner.

238 Ans. I made on a number 1 machine about one hundred & thirty-five dollars; on a number 2 machine I made about one hundred and sixty-five dollars; on a number 3 machine I made two hundred and fifty dollars.

By Mr. **Boone**:

Ques. 8. Did you make any other sizes of machines?
Ans. No, sir.
Ques. 9. Those were the profits that you made on those machines?
Ans. Yes, sir.
Ques. 10. Now, state what you sold the machines for as a whole.
Ans. I sold the small machine, number 1, for one hundred and seventy-five dollars, number 2 for two hundred and twenty-five, and number 3 for three hundred and fifty.
Ques. 11. What did that include?
Ans. That included the machine.
Ques. 12. With rifles in it?
Ans. With rifles in it.
239 Ques. 13. How much did the rifles cost you for each machine?
Ans. About two dollars and a half.
Ques. 14. If you had retained the monopoly of those machines could you have supplied the market at those prices?

(Objected to by respondent- upon the ground that it is already shown that the witness had no monopoly of hydraulic machines and had not even a right to sell the machines as he did sell them.)

Ans. I could.
Ques. 15. Do you know for what you could have purchased the Macy and Martin patent for the rifles at that time?

(Objected to by the respondent- as irrelevant.)

Ans. One hundred and fifty dollars, I believe they asked for it.
Ques. 16. How do you know that fact?
Ans. From Seth Martin, one of the patentees of the patent.
Ques. 17. Did he offer it to you for that price?
240 Ans. Yes, sir; he offered it to me for that price.
Ques. 18. When was that?
Ans. That was in 1870; the very first part of 1870, I think, or it might have been the last part of 1869.
Ques. 19. Were you then using the rifles?
Ans. Yes, sir.
Ques. 20. By whose authority?
Ans. Well, at that time the rifle patent was considered not valid and the rifles were in general use; everybody was using them without paying for the privilege, and considered that the rifle patent was of no account.
Ques 21. Did you get permission from Macy and Martin for using them?
Ans. No.

Ques. 22. Did they ever give you notice not to use them?

Ans. No.

Ques. 23. Did they ever pay any attention to it at all?

241 Ans. No, sir.

Ques. 24. Were you in a position to supply the market and continue to do so had there been no interference with your rights?

Ans. I could.

Ques. 25. Did you find any difficulty in selling your machines?

Ans. No, sir.

Ques. 26. Did you find any complaints about them?

Ans. No, sir; not after the machine was perfected.

Ques. 27. The defendant Hoskin has made a return here of three hundred and thirty-one machines manufactured and sold by defendants since the 2nd day of September, 1879. Have you calculated the difference which those machines would have brought had they been sold at the prices at which you sold machines over and above the prices at which they were actually sold?

Ans. Yes, sir.

Ques. 28. What is that difference?

(Objected to by respondent- as irrelevant.)

242 Ans. Fifty thousand dollars.

Ques. 29. Then you claim to have been actually damaged in the sum of fifty thousand dollars by reason of the lowering of the price of the machine by the defendants?

Ans. Yes, sir.

Ques. 30. How is it for the future of your patent, Mr. Fisher; have you been damaged in that in any regard?

Ans. I mean by the future of my patent and lowering the price; I included that in one amount.

Ques. 31. In that amount you make one hundred thousand dollars?

Ans. Yes, sir.

Ques. 32. Then you consider that you have been damaged fifty thousand dollars in the future of your patent and fifty thousand dollars from the business of defendants between September 2nd, 1879, and the present time?

Ans. Yes, sir.

Ques. 33. State what effect the lowering of the prices of the machines has had upon the business of selling hydraulic machines?

243 Ans. The price is reduced to such a figure that there is no profit on the machines.

Ques. 34. Would it be possible for you to get the price back?

Ans. It would be almost an impossibility for me to go to work and re-establish the old prices.

Ques. 35. Could it be done successfully?

Ans. No, sir; it could not.

Ques. 36. What effect has the infringement of the defendants had upon your business as a manufacturer of hydraulic machines?

Ans. It has ruined my business.

Ques. 37. Has it caused you to lose any money?

Ans. Yes, sir.

Ques. 38. State what.

Ans. It caused me to lose my property—my business in Nevada City.

Ques. 39. To what extent—how much in value?

244 Ans. My property up there was worth, I suppose, about six or seven thousand dollars.

Ques. 40. Has it caused you to spend any money for litigation?

Ans. It has caused me to spend money in litigation to the amount of something in the neighborhood of ten thousand dollars.

Ques. 41. Then you have been damaged in the regard about seventeen thousand dollars, have you?

Ans. I have.

Ques. 42. Now state, Mr. Fisher, whether the single-jointed machines in use at the time you made your invention were competitors of your machine or not, or to what extent were they competitors?

Ans. At the time that I introduced my machine it superseded all the one-jointed machines that I ever knew or heard of or saw.

Ques. 43 When your machines were placed upon the market was it possible to successfully manufacture and sell, introduce into hydraulic mines on this coast, single-jointed machines?

Ans. Not to my knowledge, it was not. I don't know of any machines, after my machine was successfully perfected, that were sought after; they all preferred the two-jointed machine. 245

Ques. 44. What feature in your machine was it that made it superior to the single-jointed machines?

Ans. It worked easier; it was handled much easier, and was operated much more successfully.

Ques. 45. What particular feature in its construction enabled it to do that?

Ans. Having in combination a vertical and horizontal movement.

Ques. 46. What part of your machine was it that gave you that advantage?

Ans. It was the upper joint, the vertical joint.

Ques. 47. What feature in the Little Giant machine is it that has made it a successful machine?

Ans. It is the upper joint, the vertical joint.

Ques. 48. If you were to take the vertical joint out of the Little Giant machine and place in its stead any of the joints known prior to your invention, what would have been the result? Would it have been a successful machine?

246 Ans. It would not.

Ques. 49. Do you know whether or not your machine took the place of any single-jointed machine?

Ans. I do.

Ques. 50. Did it?

Ans. Yes; it did.

Ques. 51. What, and when, and where?

Ans. It took the place of several Globe machines of Craig's in Nevada City, Moore's Flat, and at Little York; that was in 1871 or '1 or '3, I think.

Ques. 52. How do you know that?

Ans. Because I put them in myself.

Ques. 53. You supplied the Fisher machines in place of the others?

Ans. Yes, sir; and I supplied a Fisher machine in place of the Victor at Blue Tent. Erastus Bond was superintendent of the mine.

247 Cross-examination of FRANK H. FISHER by Mr. WHEATON:

Ques. 1. Which turned the easiest, your machine or the single-machines that moved on two rollers, like the Dictator, in the horizontal movement?

Ans. My machine, the Hydraulic Chief.

Ques. 2. Did not the Dictator move around easily on those rollers?

Ans. I am not speaking particularly of the Dictator, but the Victor machine. The Dictator machine I had no experience with. I know only what they tell me about it; that mine worked the easiest.

Ques. 3. Did not the Victor machine turn easily on those two rollers?

Ans. The Victor machine hardly turned at all.

Ques. 4. Why?

Ans. When they made the Victor machine they made a rather large machine. It was an improvement on the Dictator and other single-jointed machines, and they made a larger machine. The friction was so much greater that when you put on a heavier
248 pressure you could hardly use the machine at all. It required discharge-pipes some fifteen or twenty feet long in order to work it.

Ques. 5. What would have been the effect of putting that joint in place of your upper joint, leaving the discharge pipe straight and letting the rollers stand on opposite sides in a horizontal plane?

Ans. The effect would have been that it would have given it a rotary motion and a vertical motion; it would not be confined to one limited motion up and down.

Ques. 6. If it was so very hard to turn on those rollers why would it not have been confined to an up-and-down motion, since it could not have got the other motion, except by those rollers revolving on the flange?

Ans. It would, to a certain extent. It might not have been up and down; it might have been off on an angle.

Ques. 7. I am inquiring as to the operation of it when the rollers were placed in a horizontal plane and pressure of the water put on it; would it not then have been confined to an up-and-down movement?

Ans. It depends entirely on the pressure that is on the machine.

Ques. 8. While it worked as a single-jointed machine you
249 had the weight of the nozzle to work as a lever, did you not?

Ans. Yes, sir.

Ques. 9. If placed in the other place and left straight, so that it could not have been used as a lever, could any one man have revolved that discharge pipe so as to have moved those wheels?

Ans. It would depend upon the pressure it was under and the size of the nozzle on the hose.

Ques. 10. Suppose it was under any pressure from one hundred feet to five hundred, and suppose that you had used the same size of nozzles which they use on Little Giant machines?

Ans. If it had been under five-hundred-feet pressure and they had had a nozzle on which was the size of the butt they could have moved it; if it had been five-hundred-foot pressure and they had had on a three-inch nozzle they couldn't have moved it.

Ques. 11. Was there any influence in the world to make those wheels revolve when a joint was put on in that shape that I have mentioned as an upper joint to the Little Giant machine?

Ans. Not to make them revolve.

250 Ques. 12. If those wheels would not have revolved then the nozzle would have been confined to an up-and-down movement, would it not?

Ans. Would have been confined to an up-and-down movement if the pressure was strong enough to have held it in its place.

Ques. 13. Suppose the pressure of the water was a hundred feet; that would be enough to hold it in its place, would it not?

Ans. No, sir; not with a good Giant nozzle on it.

Ques. 14. Do you know how much pressure of water it would have taken to hold it in its place?

Ans. No, sir; I do not.

Ques. 15. As the Dictator joint was constructed would it not be held in its place without any pressure—that is, did not the packing come in contact with the cup and flange in the Dictator joint, so that when there was no pressure on at all the different parts of the joints remained in place?

Ans. No, sir; the pipe would fall down to the ground.

Ques. 16. That is, the outer end of the discharge pipe would fall down to the ground?

251 Ans. Yes. sir.

Ques. 17. I have not reference to that. I have reference to the different parts of the joint. Would the joint itself have fallen apart, or would the wheels have remained up against the under side of the flange?

Ans. The pipe would fall over and the top part of the joint would lower down to relieve the wheels from the bottom, without any water in it.

Ques. 18. As a matter of fact, did not those wheels in the Dictator, as they were made, stand, when there was no water in the pipe, bearing against the under side of the flange?

Ans. No, sir; not at all times. You are speaking about the Dictator. I have not given any testimony in regard to the Dictator machine. I only have seen the machine and know its construction and operation.

Ques. 19. Are you acquainted with the Watson machine?

Ans. Yes; I am acquainted with the Watson machine.

Ques. 20. Would the joint of the Watson machine fall apart when there was no pressure in the machine, or would it remain a tight joint?

252 Ans. The Watson machine would set down on the globe. The Watson machine is constructed different from the Victor machine or Dictator.

Ques. 21. In the Watson machine was the upper end of the lower section a globe?

Ans. It was—that is, a part of a globe more than half a globe.

Ques. 22. Did the upper part of that globe fit into the socket of the discharge pipe?

Ans. It did.

Ques. 23. Were the two parts of the joints held together by lugs & wheels, which wheels bore against the under side of a flange on the lower joint connected with the globe?

Ans. Yes, sir.

Ques. 24. When there was no water pressure in the Watson machine did not the joint hold together and remain a tight joint?

Ans. Not strictly speaking, it wasn't a tight joint. It set down on the globe.

Ques. 25. Did not that make it a tight joint?

253 Ans. It was not a perfectly tight joint.

Ques. 26. Is it not a fact that it was a tighter joint when there was no pressure of the water on the inside than when there was, for the reason that the pressure of the water had a tendency to force the socket and ball apart?

Ans. Of course the pressure of the water on the inside had a tendency to pull the parts apart, but if the wheels remain tight on the inclined plane the joint remained the same. There was no falling apart or closing up.

Ques. 27. Suppose that the discharge pipe of the Watson machine had been made straight, why wouldn't that have been a good joint to put on the upper end of the Little Giant machine, leaving the wheels standing in a horizontal plane, so that only a vertical motion would have been obtained by the discharge pipe?

Ans. It might have been a good joint under certain circumstances, but for a good mining joint under a heavy pressure it would not have been.

Ques. 28. Was not that machine a good, practical machine as it was used in the mines?

Ans. It was the best single-jointed machine that I have ever
254 seen. I have never seen one that had any comparison to it—the Watson machine.

Ques. 29. Did it not sell right along in Nevada City in competition with your machine until Watson was enjoined by the courts from making it?

Ans. I don't know whether Watson was enjoined before I quit making my machines or not; I think he was, though.

Ques. 30. Were Watson and you selling your several machines at the same time to the miners round Nevada City?

Ans. Watson sold his machine to what I call one-horse miners; low pressure, with a little water; a cheap machine. His machine had no comparison in size to my machine.

Ques. 31. What were the largest outlets to the discharge pipes which Watson's machines had?

Ans. I don't know of any over five inches.

Ques. 32. What were the smallest outlets to the discharge pipes which any of your machines had?

Ans. Five and a quarter.

Ques. 33. Then there was only a quarter of an inch difference between his largest and your smallest?

255 Ans. Yes, sir.

Ques. 34. At what prices did Watson sell his machines?

Ans. I don't know; they were somewhat cheaper than my machines; considerably.

Ques. 35. Do you know how much?

Ans. No, sir.

Ques. 36. Is it not a fact, then, that the Watson machine and your machine would have been selling in competition in Nevada City, except for the patents which the Craigs and Hoskin had?

Ans. No, sir.

Ques. 37. Were they not selling in competition with some of the miners there—that is, were they not on the market and both selling at the same time?

Ans. Some of the one-horse miners who had a little water and not much pressure bought them. They wear themselves out in a short time; the wheels cut in under the flange so that they had to be abandoned or repaired.

Ques. 38. Do you call the American claim a one-horse mine?

256 Ans. I don't know anything about the American claim.

Ques. 39. Do you call the North San Juan a one-horse mine?

Ans. I don't know anything about the North San Juan.

Ques. 40. And you don't know whether the Watson machine was used in either of those claims or not?

Ans. No, sir.

Ques. 41. In your machine the pressure of the water tends to force the bearing parts of the joints together, does it not?

Ans. In one portion of the joint it does.

Ques. 42. I mean the upper joint, where you get your vertical motion?

Ans. Yes, sir.

Ques. 43. And the more pressure you had on there the harder it was to move up and down, was it not?

Ans. The more pressure there was the harder the machine worked.

Ques. 44. In the Dictator machine and the Victor machine and
Watson machine the greater the pressure the more the water
257 tended to force the bearing parts of the joints apart. Is not
that so?

Ans. Yes, sir.

Ques. 45. Then in those machines the greater the pressure the easier the joint would move up and down?

Ans. Yes, sir.

Ques. 46. How was the Little Giant- upper joint in that respect; was it like the Dictator and Victor and Watson machine joints, where the water tended to force the joint apart, or was it like your joint, where the pressure of the water tended to increase the friction?

Ans. In the Little Giant it was more after the construction of the Victor and the Watson machines.

Ques. 47. That is, the socket of the discharge pipe went on the outside of the upper end of the joint—in the Little Giant upper joint?

Ans. Yes, sir.

Ques. 48. In your machine the enlargement at the butt end of the discharge pipe went inside of the upper end of the joint, did it not?

258 Ans. It went inside of a flange.

Ques. 49. Was not that flange the upper end of the joint?

Ans. That flange composed the joint.

Ques. 50. That is, it made the upper end of that joint?

Ans. The flange and the ball made the joint.

Ques. 51. Was there any ball or was it a semi-cylinder in the machine that you made?

Ans. A ball and a semi-cylinder both; a little over half a ball.

Ques. 52. What is a ball, in your way of thinking?

Ans. A round-shaped object.

Ques. 53. Is it necessary to be spherical-shaped in order to be a ball, in your judgment?

Ans. Yes; it must be round; have some round parts to it to be ball-shaped.

Ques. 54. In your judgment, is a semi-cylinder a half a ball?

Ans. A portion of a ball. I don't know as you could call
259 it a half ball.

Ques. 55. In your judgment, the way you use language, is a cylinder or half of a cylinder any part of a ball?

Ans. Naturally speaking, I don't know that it is any part of a ball.

Ques. 56. You never could put enough semi-cylinders together to make a ball of them, could you?

Ans. No; not to make a round ball. You could make it ball-shaped one way.

Ques. 57. Could you take any number of the enlargements which were on the butt end of your discharge pipes and put enough of them together to make a ball without changing the round shape of them any?

Mr. Boone: I object to all this testimony in regard to the shape of the enlargement on the Fisher joints, as it is no part of the accounting and is simply going over the testimony taken in the original case relative to the infringement.

Ans. I can make a ball shape one way and the other I could not. I could make it round one way and the other I could not.

260 (Continued until Monday, 4th instant, at ten o'clock a. m.)

MONDAY, *December 4th*, 1882.

Present : Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for respondent-.

Cross-examination of FRANK H. FISHER (continued).

By Mr. WHEATON:

Ques. 58. Mr. Fisher, please look at the drawings of Mr. Hoskin's patent of July 19th, 1870, and state why the pipe coupling there shown, if used for an upper joint in two-jointed hydraulic machines and adjusted so that the pulleys stand on a horizontal plane, would not make just as good an upper joint as the joint that you placed in the Fisher machines.

Ans. I would not, for several reasons. One reason is it would not be confined to an up-and-down movement, which is very essential in hydraulic machines, the double-jointed machines; another reason —it would not stay in its place; it has other movements besides a vertical movement; it would get off the angle, which would make it totally impracticable for a hydraulic machine with that kind of a joint; another reason—it could not be moved satisfactorily.

Ques. 59. Why not?

261. Ans. On account of its working.

Ques. 60. Moved how, do you mean?

Ans. Up and down.

Ques. 61. Why would it not move up and down satisfactorily, providing the pulleys were placed opposite each other in a horizontal line, so that the pivots which go through the centre of the pulleys would be on a horizontal line?

Ans. To make that work satisfactorily in an up-and-down movement the joint would have to be screwed together so tight that it could not move, and if it was loose enough to work it would not stay in its place. It would be totally useless for that purpose. The miners would not accept it as a substitute for anything; not as a substitute for my joint.

Ques. 62. If it is a fact that the single-jointed machines are so hard so turn on those rollers, as you have described, why would not the pulleys "*c*" represented in the Hoskin's patented pipe coupling maintain their position when there was no power at all applied to force them out of their position when placed in a horizontal plane, as I have indicated?

Ans. They are not hard to work when there is no power applied to it; when there is no friction or pressure to bear on it. Take the machine with no water in it, you could handle it; but when you come to put the water and pressure into it you can not handle it. What I mean is, it is a good working machine when it is used without water under a pressure. 262

Ques. 63. Are not the bearing portions of that joint as Mr. Hoskin made it in the Dictator machine so placed that when the water is off they are pressed together closer than or at least fully as close as when the water is on? I don't refer to the places where the pulleys "*c*" bear against the under side of the flange, but to the other bearing surfaces, where the packing is used to make a water-tight joint.

Ans. I think they are.

Ques. 64. Doesn't the pressure of the water when the machine is in use have a tendency to force those bearing surfaces apart instead of forcing them together?

Ans. Yes; and it has a tendency to force the friction wheels into the flange so much harder that it overcomes all the easiness gained by the pressure of the water on the top part.

Ques. 65. Does the pressure of the water relieve the pressure on the bearing surfaces which form the water-tight joint or not in that Hoskin pipe coupling?

Ans. The pressure of water relieves the bearing sufaces on the water side, and on the under side it increases the pressure & makes it that much harder to move, because it is all centered on one point.

263 Ques. 66. Have you ever handled either one of those machines when there was no water in it?

Ans. Yes; I have handled the machine when there was no water in it. I would not say that I have handled the Dictator, because the Dictators are very scarce; there were but few of them made. I have seen them, though; I have seen one.

Ques. 67. Did you ever see a Dictator that you could turn round on the pulleys without using the discharge pipe or something else as a lever?

Ans. At what time?

Ques. 68. When there was no water in it.

Ans. Why, yes; and I have seen them that you could not move round when there was no water on it. You can fasten them together so tight that you cannot turn them, and you can loosen them so that you can turn them.

Ques. 69. The pins marked "*e*" in the drawing of the Hoskin patent referred to are screwed through the casting which forms the cup or enlarged portion of the discharge pipe, and from there pass through the centre of the pulleys, do they not?

Ans. I don't know, according to your description, whether they do or not.

264 Ques. 70. How was it in that respect in the Dictator machines which you saw?

Ans. The one that I saw—I don't know exactly. At that time he was changing his manner of building that Dictator every time he made a machine, and he built it in various ways. Mr. Hoskin was in my shop two or three times a week during his operations there, and I don't know exactly what he was doing. I know what he did do, though.

Ques. 71. Was Mr. Hoskin ever in your shop in Nevada City more than twice in his life?

Ans. Yes, sir; he was there several times.

Ques. 72. What was his business there?

Ans. I was assisting him in making his fight against Craig on the rifles. My suit was to be decided by the decision in that suit. While I assisted him to do that work he stole my patent, my machine; he got a machine made almost as quick as I did. After I showed him my machine put together in the shop it was not more than a fortnight before he went to Dutch Flat and made one almost like it. While I was assisting him he stole what I had.

Ques. 73. What assistance did you render him in that case?

265 Ans. Collecting evidence for him.

Ques. 74. Did you put up a single dollar to the defense of that case?

Ans. No, sir; I did not: but I spent a hundred dollars and spent two weeks in Comptonville collecting testimony and taking evidence and hunting up old miners who had used a device for straightening the water before the rifle patent was patented and affidavits that would show that they were used.

Ques. 75. How were the pins on which the pulleys turned in the Dictator which you saw held in place?

Ans. I didn't say that I saw Dictators. I don't know that I examined but one Dictator.

Ques. 76. How do you find them secured in the drawings of the Hoskin patent there shown you?

Ans. By a pivot.

Ques. 77. Now, suppose those pins were screwed in a little tighter so as to come tight against the pipe marked "*b*" in the drawings of the Hoskin patent, would not that hold them in position when placed in a horizontal plane?

Ans. It would depend on how the pivot was made—whether
266 it was a thread cut in the ball or centered in there.

Ques. 78. Suppose they were just simply screwed up tight so as to make so much friction there that the wheels could not turn?

Mr. Boone: I object to this testimony unless it is shown that a machine has been used in the way described by counsel.

Ans. If they are screwed up tight so that the wheels could not turn they would not turn.

By Mr. Wheaton:

Ques. 79. In that case if the wheels stood on a horizontal plane would not that be just as good a joint as the joint which you placed in your machine?

Ans. No, sir.

Ques. 80. In such case would not the discharge pipe be confined to an up-and-down motion, providing the wheels were placed in a horizontal plane and the pins "*e*" screwed so tightly against the pipe "*b*" that they could not get out of place?

Ans. If it was screwed tight enough there to hold it to an up-and-down movement it would hold it there—if it was screwed tight enough to hold it there.

Ques. 81. Then, in that case, why would not that be just as good a joint as the Fisher joint?

267 Ans. It would not. It would not be a practical working machine. You couldn't sell it to a miner.

Ques. 82. Don't you believe that such a machine would be a practical working machine now?

Ans. No, sir; this age is not going backwards; going ahead.

Ques. 83. Suppose in that pipe coupling described in the Hoskin patent that the wheel, instead of being moveable, was cast solid as a part of the pipe "*b*," and those pins put in in the same way and in the same place as in the pipe coupling, wouldn't that be a practical joint, in your judgment?

(Objected to by complainant- as incompetent, irrelevant, and immaterial.)

Ans. I have stated several times that that joint cannot be made a practical working joint for one motion not to have it so arranged that it will have a vertical motion.

Ques. 84. Then, if any one could take that joint and make it a practical working upper joint in a machine, it would be outside of anything that you have ever discovered so far, would it?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. No, sir; I don't think it would be outside of anything I have discovered.

268 Question 85. Why wouldn't it be outside of anything you have discovered if in your judgment at this time it is impossible to make that a practical working upper joint in a two-jointed hydraulic machine?

(The same objection by complainant-.)

Answer. My experience as a mechanic teaches me that such an arrangement would not be a practical working machine and could not be made such.

Question 86. Then how can you claim, if any one could make it such, that it would be inside of anything that you have discovered up to this time?

(The same objection by complainant-.)

Answer. I don't know that it would be anything inside of what I have discovered.

Question 87. Do you see the rifles near the butt end of the discharge pipe in Exhibit "New Style Joint" now before you?

(Objected to by complainant- as not cross-examination.)

(Complainant- further objects to any evidence based upon the new style joint machine or any attempt to make evidence in this case to be used in the contempt proceeding now before the court.)

Answer. I do.

269 Question 88. Is not the cup-shaped enlargement shown in the patented pipe coupling mentioned?

Answer. No.

Question 89. What is the difference?

Answer. That pipe coupling don't show any rifles.

Question 90. The rifles are not in the cup-shaped enlargement, are they?

Answer. The drawings of the Hoskin pipe coupling patent show the cup-shaped enlargement.

Question 91. Are the cup-shaped enlargements, so far as you can see, alike in Exhibit "New Style Joint" and in the patented pipe coupling? If not, please explain the difference.

Answer. The new joint has the pivot pins at a distance from the edge of the cup, and in the Hoskin pipe coupling they are directly at the edge of the cup. This cup-shaped enlargement in the pipe coupling is attached with rollers, while the casting lying before me (Exhibit "New Style Joint") does not have them. There is no arrangement for rollers in it at all.

270 Question 92. Are not the pins just about as far from the edge of the casting referred to, in proportion to its size, as they are from the edge of the cup-shaped enlargement shown in the drawings of the patented pipe coupling, so far as you can judge from your eye? I am not asking you anything now about the rollers nor the attachments.

Answer. Yes; about the same distance as shown in the drawings.

Question 93. As near as you can judge, are not those pivot pins which go through the sides of the cup-shaped enlargement of the discharge pipe placed so as to come exactly at the center of motion, which will make it operate in connection with the water-tight joint both in the patented pipe coupling and in Exhibit "New Style Joint."

Answer. They must be near the center to operate. From the look of the patented coupling and the casting lying on the floor (Exhibit "New Style Joint") they don't look to be in the same place.

Question 94. Then, in respect to the cup-shaped enlargement and the pins around which that cup-shaped enlargement turns, as when the pipe is elevated or depressed and no other motion given

271 to it, when they are used in the joints, are not Exhibit "New Style Joint" and the patented pipe coupling alike?

Answer. No; they are not alike, because one is confined to a vertical motion and the other is not.

Question 95. Is that all the difference that you can see between them?

Answer. Well, the difference is, one is made to carry rollers and the other is not.

Question 96. How do you know that the cup-shaped enlargement, as it now lies before you, on Exhibit "New Style Joint," separate from the balance of the machine, cannot be used to carry rollers just exactly like the rollers shown in the patented pipe coupling?

Answer. It might be altered, differently constructed, to carry rollers, but your rollers would be of no account with that (Exhibit "New Style Joint"), because it is confined to a vertical movement.

Question 97. What is to hinder putting rollers in the inside of the cup-shaped enlargement of Exhibit "New Style Joint" and letting those rollers turn underneath the flange shown in the joint now lying before you instead of using the eyebolts in the machine?

272 (Objected to by complainant- as irrelevant and immaterial unless it is shown that the machine has been so constructed and used.

Answer. It is not a practical question; it would not be a practical working machine; it might make a machine that would be of no use after you got it done.

Question 98. Do you see the eyebolts in Exhibit "New Style Joint," now before you, in the upper end of which the pins mentioned work when the joint is together?

Answer. Yes; and he stole them from Watson.

Question 99. How far does the center of the pin which comes through there come from the lower edge of the flange above them?

Answer. I don't know; I never measured it.

Question 100. Is it not about two inches?

Answer. It looks to be two inches as placed now; it may be one inch or it may be three and a half.

Question 101. Are not the upper ends of those eyebolts, as now formed, almost in the form of a pulley or roller?

Answer. The end of them is partially round.

Question 102. What is to hinder making the upper end of
273 those eyebolts large enough, so that they could bear against
the side of the flange above them and then cut those heads off,
leaving them in pulleys?

(Objected to by complainant- as incompetent unless it be shown that a machine has been so used, and also as irrelevant and immaterial.)

Answer. I don't know what you want to get at.

Question 103. What is to hinder cutting those two bolt heads right off, so as to leave them pulleys, and working the joint in that way?

Answer. What is to hold them there?

Question 104. Let them come against the under side of the flange above them.

Answer. They must have some arrangement to hold them in position; if you cut those off and leave them there they would fall to the ground.

Question 105. Would they not be held in position if the joint was together and the pins went through them just the same as in the pipe coupling?

(Objected to by complainant- as incompetent, irrelevant, and immaterial.)

Answer. Yes; if those were cut off and left there and a
274 bolt went through the flange and went into them it would
hold them in that position.

Question 106. On the contrary, would it not also be correct that if a bolt was welded to the lower side of the pulleys in the patented pipe coupling and then fixed in a lug, as shown in Exhibit "New Style Joint," that it would work the same as that new joint does?

Answer. I don't understand the question. There is no pulleys in the new joint, in wheels in the joint.

Question 107. Suppose that an iron was welded to the under edge of the pulleys shown in the patented pipe coupling so as to make a bolt like the eyebolts in Exhibit "New Style Joint," and then lugs cast on the side of the pipe "*b*" shown in the Hoskin patent, the same as they are on the side of that new joint, why would not that be identically such a joint as is shown in Exhibit "New Style Joint?"

(Objected to by complainant- as incompetent, irrelevant, and immaterial.)

Answer. Do you mean taking the arrangement of the eyebolts and lugs on the Exhibit "New Style Joint" and placing it on the pipe coupling shown on the Hoskin patent?

Question 108. Yes.

275 Answer. It would be merely substituting this machine (Exhibit "New Style Joint") for that (referring to the Hoskin pipe coupling patent). It would be taking the arrangements on this machine (Exhibit "New Style Joint") and placing them on that pipe coupling; just changing one for the other.

Question 109. When that is done does it not make quite as good an upper joint out of the patented pipe coupling as the upper joint in your machine?

(Objected to by complainant- as incompetent, irrelevant, and immaterial.)

Answer. I don't think it would, although it might be. That thing could only be demonstrated by the use of it.

Question 110. You don't know anything about how it would be?

Answer. I don't know how it would be. These machines all prove themselves by testing; theory don't work in hydraulic mining.

Question 111. In your machine there is no packing at all in the upper joint, composed of leather or rubber or anything of that kind, is there?

Answer. I didn't use any packing, although packing can be
276 used. The joint is tight without any packing. I believe I did pack the first one I made.

Question 112. Why did you not continue to pack after that?

Answer. I didn't require it.

Question 113. This machine, Exhibit "New Style Joint," wouldn't work without packing, would it?

Answer. I don't know.

Question 114. What is your opinion about it from the examination that you have made of it?

Answer. It could be used without packing.

Question 115. Would it be anything like a water-tight joint if it was used without packing?

Answer. It would if the parts were turned on a true circle, spherical ball surfaces. The Globe machine joint worked the same way without packing, two parts together, iron to iron. The Goose Neck worked iron to iron, and my machine worked iron to iron.

Question 116. In the Goose Neck you refer to the lower joint and not to the upper one, do you not?

Answer. It didn't have any upper joint. The Goose Neck
277 was a one-jointed machine.

Question 117. Did you not yourself make a great many of those Goose Neck machines in which you made a lower metallic joint and an upper joint of canvas from which a vertical motion was obtained when the machine was in use?

(Objected to by complainant- as not cross-examination and as incompetent, irrelevant, and immaterial.)

Answer. No, sir.

Question 118. Did you not make a great many Goose Neck machines and pay Allenwood a royalty for the right to make them?

Answer. No, sir.

Question 119. Did you not make any of them?

Answer. Yes, sir.

Question 120. Did you ever make any of them in which there was not a vertical motion to be obtained?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. I made the coupling for Mr. Allenwood.

278 Question 121. What do you mean by coupling?

Answer. Used for a swivel joint—just a mere coupling—similar to that which is used in a fire-engine hose, except that instead of making them of brass I made them of iron.

Question 122. Did you not make and sell those Allenwood or Goose Neck machines on your own account?

Answer. Yes; I made a half a dozen machines.

Question 123. Any of those you made and sold on your own account, did they afford a vertical motion or not?

Answer. They didn't have a second joint at all.

Question 124. Did any of them afford a vertical motion or not?

Answer. No, sir; they did not.

Question 125. Could they not be used with an up-and-down motion in the mines?

Answer. Yes; by placing a canvas hose on the end of them.

Question 126. Did you not sell them in that way?

279 Answer. No, sir.

Question 127. Then you did not sell the perfected machines at all, did you?

Answer. I sold the Goose Neck.

Question 128. Did you sell the entire machine finished ready for work.

Answer. No, sir.

Question 129. When did you cease making the Fisher machine?

Answer. About 1872.

Question 130. Why did you cease making it?

Answer. Well, I got bu-sted up in business; got enjoined from using the rifles—knocked endways generally. I was enjoined from buying the rifles and using them.

Question 131. What difference did that make about your making and selling your machine?

Answer. I got crippled so that I could not make them myself.

280 Question 132. You were never enjoined from making the two-jointed machine, were you?

Answer. No, sir.

Question 133. Then why did you not keep right on making it, notwithstanding you were restrained from using the rifles, if it was such a good thing?

Answer. I was bursted up in business, and it took all my time and money to carry on a lawsuit.

Question 134. Is it not a fact that you could not sell or use your two-jointed machines unless the parties had a right to use the rifles in them?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. I had parties offer to buy my machines without any rifles, but at that time I got so involved in debt that I could not get the castings to make the machine with.

Question 135. When did you commence making a two-jointed machine?

Answer. Some time in 1870.

281 Question 136. What business had you followed up to that time?

Answer. Machinist business.

Question 137. What business did you follow after that time?

Answer. Making the "Hydraulic Chief."

Question 138. Did you also keep on with the machinist business generally?

Answer. I didn't have much else to do. I confined myself mostly to making the "Hydraulic Chief."

Question 139. Then you bursted up in the business of making the Hydraulic Chief?

Answer. No, sir; I bursted in business fighting litigation.

Question 140. In what other business did you burst up besides the business of making the Hydraulic Chief and the machinist business?

Answer. I didn't burst up in any other business particularly. That is about all the business I had.

282 Question 141. The suit that you fought which took so much time and money was the suit against the Macy & Martin patent on the rifles, was it not?

Answer. Yes, sir; that took some considerable money.

Question 142. Was there any other suit that you fought prior to 1872 except that one suit on the Macy & Martin patent?

Answer. Yes; my suit against R. R. and Joe Craig.

Question 143. What time in 1872 did you burst up in business?

Answer. In November.

Question 144. Was it not the fact that the reason why you quit making the Hydraulic Chief was because you were enjoined from using the rifles in them, and the Hydraulic Chief was not a machine that could be used in competition with other machines unless it had the rifles in it?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. The reason why I quit making them was because I was enjoined from using the rifles and because I could not get any more cash to get castings with.

283 Question 145. Could the Fisher machines be sold without the rifles, in competition with single-jointed machines that had rifles in them.

(Objected to by complainant- as irrelevant and immaterial.)

Answer. It never went in competition in that shape, and I don't know whether it could or not.

Question 146. Without rifles was it a practical hydraulic mining machine, as compared with the single-jointed hydraulic mining machines with rifles in them, in your judgment?

(Same objection by complainant-.)

Answer. That was a matter of opinion with miners. Some men think it was and others think not. For myself I don't think it was a practical machine without some device to straighten the stream.

Question 147. Please name one single miner who understood the business who considered that a practical machines without the rifles in it?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. I can't do that because it is so long ago that I have
284 forgotten it. I had many a letter at the time I stopped urging me to build the machines, and I merely stated my reasons for not continuing to make them.

Question 148. After 1872 did you not have means, and was it not a fact that you commenced and prosecuted to final judgment a suit against R. R. and Joe Craig for infringing your patent?

Answer. No, sir; that suit might have been brought in the early part of 1872, but after I burst up in business I commenced no suit against them.

Question 149. Was that suit what burst you up?

Answer. That suit and things connected with it—being fined and sent to jail and all these little things taken together just ruined my future business.

Question 150. Could you sell the Hydraulic Chief without the rifles in it for one hundred and thirty-five dollars?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. I don't know whether I could or not.

Question 151. Do you know what you could have sold your two-jointed machines for at any time without the parties purchas-
285 ing had the right to use the rifles in them?

Answer. No; I don't know as I do. I might add to that answer by referring to some of my old letters; I might find some of them, but I don't know that I could. I know that I did have offers for the machine without the rifles, but I did not furnish any nor set any price.

Question 152. In these machines that you sold at from two hundred and fifty dollars down to one hundred and thirty-five dollars——

(Interrupting.) I didn't sell any machines for one hundred and thirty-five dollars.

Question 153. Did you not testify here the other day that you made and sold the number 1 Hydraulic Chief for one hundred and thirty-five dollars?

Answer. No, sir; I didn't testify any such thing. I said I made that profit on the number 1 machine.

Question 154. The machines that you sold at from one hundred and seventy-five to three hundred and fifty dollars each, did you sell those machines with rifles in them?

Answer. I sold those machines with devices in them for
286 straightening the stream of water—some of them—all but
about five or six, I guess.

Question 155. Was that device that you sold in those machines a device which the court afterwards held to be an infringement of the Macy & Martin patent?

Answer. Yes, sir.

Question 156. The price of hydraulic mining machines has come down very much, has it not, since the patent on the rifles expired?

Answer. I don't know with regard to that. Mr. Hoskin has reduced the price very much since this suit has been decided against him.

Question 157. Had he not reduced the price very much before this suit was commenced?

Answer. No, sir.

Question 158. Isn't that so? Had he not put the price down a hundred dollars on a machine before this suit was commenced?

Answer. No, sir.

Question 159. The Macy and Martin patent expired after this suit was commenced, did it not?

287 Answer. Yes, sir.

Question 160. Did not the fact of the expiration of that patent, so far as you are informed, open the field for the Hydraulic Chief and for other mining machines which had been already invented many years before?

Answer. No, sir.

Question 161. What was to hinder your manufacturing the Hydraulic Chief after the expiration of the Macy & Martin patent, so far as patent rights were concerned?

Answer. The same objection that there was before. I could not have manufactured it myself, but I could have got others to manufacture it, I suppose.

Question 162. Do you mean to say that there was the same objection to your making and selling the Hydraulic Chief after the rifle patent expired that there was before?

Answer. As far as I was concerned. I could not have made it myself; I didn't have the business to manufacture the machine.

Question 163. The injunction against you for the use of the rifles had run out then, had it not?

288 Answer. Yes, sir.

Question 164. Do you know of anything which prevented you then from going into the field with the Hydraulic Chief?

A. Not being able to manufacture the machine to introduce it. On account of the long years that defendants have had the sway of the business, I was not able from my means to go to work and manufacture the machines.

Question 165. Is it not a fact that you arranged with Mr. Hendy so that he has agreed to furnish to miners that machine?

Answer. Not until after this suit was decided.

Question 166. Did you not make your assignment to Mr. Hendy before you commenced this suit?

Answer. Yes, sir.

Question 167. Was not the consideration of the assignment that he was to furnish means and manufacture the machine?

Answer. Not till after the termination of the suit.

289 Question 168. Is it not a fact that under that contract either he or you have gone on and made some two-jointed machines?

Answer. Yes, sir; it is a fact, but not till the suit has been litigated?

Question 169. Is it not also a fact that the first machine that you and he made, instead of making it like the Hydraulic Chief with the enlargement at the butt end of the discharge pipe inside of the upper end of the curved section, you changed and made it as Mr. Hoskin had been making the Little Giant, with the enlargement of the butt end of the discharge pipe outside of the upper end of the curved section?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. It was made like the Little Giant, I believe.

Question 170. Why did you make it like the Little Giant instead of making it like the Hydraulic Chief?

Answer. For the very reason that somebody ordered from Mr. Hendy one made in that way.

Question 171. Who ordered it?

290 Answer. I don't know.

Ques. 172. How does the weight of the Hydraulic Chief compare with the weight of the Little Giant of the same capacity, the same diameter to the outlet of the discharge pipe?

Answer. The same capacity of Little Giant as the Hydraulic Chief. The outlet in the Chief, I think, was about half an inch the largest.

Question 173. What was the size of the inlet?

Answer. Eleven inches, of the smallest hydraulic machine I made.

Question 174. What was the size of the inlet to the largest one made by you?

Answer. Fifteen inches.

Question 175. What was the size of the outlet of the discharge pipe of the Hydraulic Chief where the inlet pipe was fifteen inches in diameter?

Answer. Ten inches.

291 Question 176. Do you know how the weight of the Hydraulic Chief compared with the weight of the Little Giant, where each had capacity for throwing the same size stream?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. You will observe that his number 1 and 2 machines, or even his number 3 machines, were about the capacity of my number 1 machine. My number 1 machine was stouter than those machines. At that time they were in advance of the Little Giant machine in the market and I was testing. They were getting to use larger streams of water and under heavier pressure, than had been used until that time, and the machines were stouter.

Question 177. The question is whether you know how the weight of the Hydraulic Chief and the Little Giant compared, where each had the capacity for throwing the same size stream?

Answer. My machine, having eleven-inch inlet, had a great advantage over a machine that didn't have but a nine-inch inlet. I carried my water clear up to my discharge pipe, some two or three inches larger body of water in diameter than they did; consequently my machine was larger. My number 1 machine I reckon about the same as their number 2 or 3.

292 Question 178. Then your Hydraulic Chief, the body of the machine was much larger than the Little Giant, where the discharge pipes were of the same size?

Answer. No; I think the outlet of mine was a quarter of an inch the largest.

Question 179. Then where your discharge pipe was a quarter of an inch larger than that of the Little Giant machine how much larger was the inlet pipe to your machine than the inlet pipe to that particular Little Giant machine?

Answer. Four inches.

Question 180. Do you know how the weights of those two machines compare with each other?

Answer. Mine was the heaviest.

Question 181. Do you know how much heavier?

Answer. No; I do not. Another thing, I made my machine with a lever attachment on, which added to its weight and made it superior to handle to the Giant machine.

293 Question 182. Which machine had the sharpest curves for the water to pass through, the Hydraulic Chief or the Little Giant?

(Objected to by complainant- as irrelevant and immaterial.)

Answer. Some of the Giants had the same as mine and others had less.

Question 183. Do you know what two-jointed machines can be sold for in the market when placed in competition with single-jointed machines?

Answer. At the present time?

Question 184. Yes, or at any other time.

Answer. There are no single-jointed machines in the market that I know of—haven't been for ten years.

Question 185. Where single-jointed machines are in the market and two-jointed machines also in the market, do you know what the difference in price would be—that is, how much larger price the two-jointed machines would bring than the single-jointed machines?

Answer. No, sir; I don't.

By Mr. BOONE:

294 Question 186. Could you sell a single-jointed machine where the two-jointed machines are in the market?

Answer. No, sir; you could not.

By Mr. WHEATON:

Question 187. Do you know how that is?

Answer No, sir; I don't. I know that at the time I was manufacturing the only machine that was sought for was the two-jointed machine.

Question 188. If the two-jointed machine was the only machine then sought for how was — that so many Dictator, Victor, Clipper, and Champion machines were sold?

Answer. I don't know that there were. My knowledge of the fact was that every machine except the Champion was throwed out, discarded, and the two-jointed machine put in its place. The Champion machine was manufactured in the foundry there by Watson & Allan, and they were making an infringing article, and they put down the price very low and sold a few. They made it cheap in order to sell it. It was an inferior machine to the two-jointed machine.

Question 189. When did you leave the mines to come down to San Francisco to live?

295 Answer. November, 1872.

Question 190. Have you been through the mines any since?

Answer. No, sir.

Question 191. Have you sold any hydraulic mining machines, then, since then?

Answer. No, sir.

Question 192. Do you know from your own knowledge what the business has been since then?

Answer. Not from actual knowledge.

Question 193. You don't know how long single-jointed machines, such as the Victor and Dictator, were continued in use?

Answer. They were discarded generally before I left. Where a man bought them he had a light pressure and a light bank to work on and didn't require a superior machine. Parties who had them in that kind of a mine used them, I suppose, till they were worn out. It didn't take long, I suppose; they can't stand much.

296 & 297 Question 194. Did you ever see one that was worn out?

Answer. Yes, sir; I have seen a dozen of them.

Question 195. When were they made?

Answer. In 1872.

Question 196. Worn out in less than a year?

Answer. Yes, sir; worn out so that they were discarded in four days.

Question 197. Where did you see one that was so worn out that it was discarded in four days?

Answer. I have seen it in the Manzanita mine in Nevada City. I won't say worn out, but discarded.

Question 198. What kind of single-jointed machine was it?

Answer. Globe machine—Craig patent.

Question 199. Those Globe machines had the enlargement of the discharge pipe inside of the Globe, did they not?

Answer. Yes; the Globe machine did.

298 Question 200. And that made them turn and work very hard, did it not?

Answer. Yes, sir.

Question 201. Were they not also an impracticable machine on that account when they came to a high pressure?

Answer. Yes; an impracticable machine on a first-class mining claim. You might work them on a one-horse claim, where you could work a one-jointed machine, where there was no pressure and there wasn't a high bank to wash down. They were not a practical mining machine with a pressure on; they could not be handled.

Question 202. Was it not a big improvement on those single-jointed machines when they were so changed that the pressure of the water instead of forcing the parts together tended to force them apart?

Answer. It was an advancement in hydraulic mining; they done a little better.

Question 203. What is the reason, so far as you know, if you have the exclusive right of making hydraulic mining machines
299 from this time forward, that you cannot make the price as high as you like?

Answer. Because after the price is once put down on a manufactured article it is an impossibility to raise it, especially if it is put down over one-half.

Question 204. Why is it an impossibility if people will have a two-jointed machine and you have the right to make them and they can't get them anywhere else?

Answer. My experience in these matters is that you can never get the price back; that once reduced to a low figure it is impossible to get it back.

Question 205. Is it not a common thing in the market generally for articles to advance in price?

Answer. Not double price; not double itself.

Question 206. Do you know what Macy & Martin sold their patented rifles at?

Answer. Yes, sir.

Question 207. What was it?

Answer. Five dollars. I take that back. I don't know of my own knowledge.

300 Question 208. Is that your belief that they sold them at five dollars?

Answer. No; my belief is they never got anything for them.

Question 209. Did they put any of them into use?

Answer. Not that I know of.

Question 210. Don't you know that the Craigs, when they got that patent, raised the price of rifles to ten times and more, too, the amount that Macy & Martin had been selling them at?

Answer. No, sir; I don't know anything about it. I know that the Craigs sold them at a low figure—two dollars and a half, three dollars and a half; something like that.

Question 211. Don't you know that the Craigs used that rifle patent to keep up the price of mining machines, and that they wouldn't sell rifles by themselves, except for their own machines?

Answer. I know that they did sell rifles to outsiders.

Question 212. Did the Craigs have the rifles on the market to sell to outsiders?

301 Answer. I don't know; I know that they did sell them.

Question 213. To what parties did they sell them to whom they didn't sell machines?

Answer. Sold them to Ashburn & Baker.

Question 214. What kind of a machine was that?

Answer. One of my machines.

Question 215. When was that?

Answer. It was after they bought the rifle patent.

Question 216. What did Ashburn & Baker pay for the rifles?

Answer. Two dollars and a half. They also sold rifles to other parties at three dollars and a half. I can give you the names (referring to memorandum). They sold them to the Sweetland Creek Company for three dollars and twenty-five cents.

Question 217. When was that?

Answer. December 2d, 1873.

Question 218. Did the Craigs have any trouble in raising
302 the price of rifles after that?

Answer. I don't know anything about that; I don't know as they sold any more; I don't know as they did raise the price of them.

Question 219. You know that they made the rifles bring more than a hundred dollars in every machine that they sold, don't you?

Answer. No; I don't know it.

Question 220. How do you know anything about the future of your patent as to what its value is?

Answer. I don't know that I could answer that question as to what the future of my patent would be. The world might come to an end in the next twenty-four hours, and if it did my Hydraulic Chief wouldn't put the fire out.

Question 221. You testified in your direct examination that if there had been no interference with your rights you could have supplied the market with hydraulic mining machines. What do you mean by that?

Answer. I mean if there had been no interference I would
303 have been able to have gone on and manufactured the machinery.

Question 222. Do you mean to say that getting a decree against you on the Macy & Martin patent was an interference with your rights?

Answer. That, in a certain way, had an interference with my rights.

Question 223. How?

Answer. In crippling me up so that I was unable to conduct the business, losing my patterns and owing a big amount of money.

Question 224. How long since you have been able to manufacture Hydraulic Chiefs, so far as means are concerned?

Answer. As far as means are concerned to manufacture myself, I don't know as I am able to do it now. I am able to get others to manufacture them for me.

Question 225. In your direct examination you spoke about there being no single-jointed machines sold after your machine was perfected. . What do you mean by perfecting your machine?

Answer. I meant by that my first machine or two that I
304 made was not perfected. I had to strengthen different parts to make alterations.

Question 226. When was your machine perfected, if you can tell?

Answer. Along some time a few months before I got through—shut up shop.

Question 227. How many of the Hydraulic Chief machines did you ever sell altogether?

Answer. I can't tell exactly how many I did sell.

Question 228. State as near as you can.

Answer. I suppose about a hundred.

Question 229. Did you sell those hundred machines at prices you have named?

Answer. I probably sold the last 75 or 50 of them at those prices.

Question 230. What sizes were the machines that you sold most of?

Answer. I think I sold about as many large ones as anything else; the largest size.

305 Question 231. Number 3?

Answer. Yes, sir.

Question 232. Then you must have made from fifteen to twenty thousand dollars on the sales of the machines that you did make and sell?

Answer. I can't tell you how much money I made. I couldn't make money fast enough to keep the thing going.

Question 233. Did you spend as much as five thousand dollars in litigation?

Answer. Yes, sir.

Question 234. Did you spend as much as ten thousand dollars?

Answer. Yes, sir.

Complainant moves to strike out all that portion of the testimony relating to the new style machine exemplified by Exhibit "New Style Joint" on the ground that it is not cross-examination and that it is incompetent, irrelevant, and immaterial.

306 Re-examination of FRANK H. FISHER by Mr. BOONE:

Question 1. You heard the testimony of Mr. Hoskin, did you, Mr. Fisher, in which he stated that your machine would leak—that water would spurt out from the joint when it was moved in either direction. Is that true?
Answer. No, sir.
Question 2. Do you find any difficulty in moving the discharge pipe of your machine?
Answer. You can move the Hydraulic Chief sideways just as easy and just as well as you can the Little Giant.
Question —. Would there be any more leaking than in the Little Giant?
Answer. No, sir; move it by taking hold of the discharge pipe, I mean.
Question 4. Now, referring to this machine, Exhibit New Style Joint, do you find in that all the elements which you find in the Hoskin pipe couplings?
307 Answer. No, sir; I don't.
Question 5. Just state the difference.
Answer. There is no incline plane and wheels in this machine (Exhibit New Style Joint).
Question 6. What has he substituted in place of the incline plane and wheels?
Answer. Bolts, guides or lugs, and pivots.
Question 7. What result does he produce by that?
Answer. He confines it to one motion—a vertical motion—up and down.
Question 8. Does it change the operation of the machine from the operation as exhibited in the Hoskin pipe coupling patent?
Answer. Very materially.
Question 9. After the two-jointed machines came into use what became of the single-jointed machine-?
Answer. They were abandoned; no market for them.
308 Mr. WHEATON: We object to that last question and answer, as the witness shows that he left the mines in 1872, and he could not have known, from his own knowledge, what he now states.

By Mr. BOONE:

Question 10. Before you left the mines, Mr. Fisher, what had become of the single-jointed machines?
Answer. They were abandoned.
Question 11. What had taken their place?
Answer. The Hydraulic Chief and Little Giant.
Question 12. In what year was it your machine was perfected?
Answer. Perfected in 1871. My first patent was December 20, 1870.

Question 13. What do you mean by perfected, Mr. Fisher?

Answer. That is, to get rid of all the difficulties that miners would suggest or discover, or I would discover myself. If I made a machine and found it a little weak in one part, when I made another I would make it a little stronger there.

309 Recross-examination of FRANK H. FISHER by Mr. WHEATON:

Question 1. Do you mean to say that your machine was not perfected until 1871?

Answer. Yes, sir; I mean to say that my machine was not perfected until 1871.

Question 2. Then you took your patent out before it was perfected, did you?

Answer. I took my patent out in December, 1870.

Question 3. You had applied for it a good while before, had you not?

Answer. I don't recollect how long before I had applied for it.

Question 4. Is that the reason that your original patent spoke about a ball-and-socket joint, because you applied for a patent while you had the machine in your head, and afterwards made your machine without a ball-and-socket joint?

310 Answer. No, sir; what I mean by perfecting it is I strengthened certain parts that I thought were light, and the curves that were too abrupt I made longer. I didn't change the construction of the invention at all.

Question 5. What was the effect of the curves as they were before you changed them?

(Objected to by complainant- as immaterial.)

Answer. The supposition was that if a curve was a little short, abrupt, to lengthen that it would have a tendency to give the water a freer access to go through the machine than it would have to strike the sharp points.

Question 6. You made your machine of greater capacity, did you not, than the single-jointed machines that were then on the market?

Answer. My largest machines were larger. My first and second machines were longer than the general size of machines were. It was just in the time of advancement in hydraulic mining and people wanted a superior machine, something that would handle easy and carry a greater amount of water and work easier under heavy pressure. They were striving to gain a machine that would work under those difficulties. My machine accomplished all that.

Question 7. Did you sell more or less than a half a dozen of your number one machines?

311 Answer. I sold twenty-five.

Question 8. I understood you to say that those that you sold were mostly number 2 and number 3 machines?

Answer. I sold the most of my number 3 machines, to the best of my recollection, and about an equal number of the other two sizes, I think. I have not dates to go by.

Question 9. Do you know, as a matter of fact, how many of each you did make?

Answer. No, sir; I do not. I know that two different companies had six or seven or eight apiece. I can't tell how many I made.

Continued until Saturday, 9th instant, at eleven o'clock a. m.

312 *Testimony of Joseph McGillivray.*

SATURDAY, *December 9th*, 1882.

Present: Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for defendant-.

Examination-in-chief of JOSEPH McGILLIVRAY on behalf of respondent- by Mr. WHEATON:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Joseph McGillivray; my age is 53 years; I live in Oakland, and I am a miner.

Question 2. How long have you been a miner?

Answer. Since 1850.

Question 3. What experience have you had in the use of hydraulic mining machines?

A. I have had a very large, extensive practice in them, from the smallest to the largest.

Question 4. For how many years have you been in the habit of personally using hydraulic mining machines?

313 Answer. I haven't handled any myself; I have superintended and managed them since 1850, the greater portion of the time.

Question 5. What has been your position in connection with mines?

Answer. Only to superintend; a part of the time owner and part of time superintendent.

Question 6. Please state the different hydraulic mining machines that you have been familiar with.

Answer. We have used the Fisher—had the Fisher machine used; I don't remember the name of it; Dictator, I think.

Question 7. Fisher's machine was the Hydraulic Chief?

Answer. Oh, yes; the Chief; that is it. Next after that we used, I think it was called, the Victor; that we got from Craig; made in Marysville by Williamson.

Question 8. Have you used any other machine that you think of?

Answer. We have used different Giants from 1870 on; there have been improvements.

Question 9. What was the Victor that you speak of, a
314 single-jointed machine or a double-jointed one?

Answer. Single-jointed machine.

Question 10. Which of those different machines that you have named has been the best machine to use, in your experience?

Answer. The latest improvement, I suppose, is the best of all.

By Mr. BOONE:

Question 11. The Little Giant?
Answer. The Little Giant is the best.

By Mr. WHEATON:

Question 12. Next to the Giant, which machine that you have used has worked the best?

Answer. The Victor worked better than the Fisher with us. We threw the Fisher aside and worked the Victor.

Question 13. When was it that you threw the Fisher machine aside?

Answer. In 1872.

Question 14. In what claim were you using the Fisher machine when you threw it aside?

Answer. In a claim of my own on the Trinity river called the McGillivray property.

315 Question 15. In what county?

Answer. Trinity county.

Question 16. How long did you continue to use the Victor machine after you substituted it for the Fisher machine?

Answer. I used it until I sold out the property and left there, in 1874. It was in use when I left.

Question 17. What became of the Fisher machine when you threw it aside?

Answer. I left it on the place; didn't dispose of it. It was lying idle. We had in the meantime got Giants, that we were using, and also this Victor. We always worked the Victor.

Question 18. How long did the Victor continue in actual use in that claim, to your knowledge, after you threw aside the Fisher machine?

Answer. I was back the year afterwards; might have been a year and a half after I sold it, in 1875, and they were using it then. I have never been there since.

Question 19. How did the Victor compare with the Little Giants which you worked in that claim along with it?

316 Ans. It was better, I say, than the Fisher.

Question 20. Did you use any Little Giant machines in that claim after you threw aside the Fisher machine, and before you sold out?

Answer. I used those machines in other claims. I had other claims on the other side of the river.

Question 21. I want to confine it to this particular claim.

Answer. None other but that.

Question 22. Then the Victor machine was used exclusively in that claim for three years after you threw aside the Fisher machine?

Answer. Yes, sir; exclusively; it was the only machine used in that claim.

Question 23. Was the Fisher machine that you threw aside a single-jointed or a two-jointed machine?

Answer. That had two joints.

Question 24. What was the trouble with that which caused you to throw it aside?

317 Answer. It leaked very badly, and the men couldn't keep it in order. It got out of order easily; it would not do the work as well.

Question 25. Do you know what part got out of order?

Answer. It was in the coupling—in the joint.

Question 26. Which joint, the upper or lower joint?

Answer. I think it was the upper joint—threw the water back on the men who were working.

Cross-examination of JOSEPH MCGILLIVRAY by Mr. BOONE:

Question 1. How long have you lived in Oakland Mr. McGillivray?

Answer. My family has been in Oakland since 1874. I have been in the mines myself.

Question 2. Do you spend your time in the mines?

Answer. Most of it; yes, sir.

318 Question 3. In the capacity, as you stated, of superintendent and owner?

Answer. Yes, sir.

Question 4. Have you ever handled those machines yourself?

Answer. Yes, sir; handled them all.

Question 5. Merely as an experiment, or in the way of practical working?

Answer. Generally as an experiment, but very often I would take hold and take a man's place for a shift.

Question 6. Have you practically yourself handled each of those machines you spoke of?

Answer. Yes, sir; I have practically handled them all.

Question 7. When did you purchase the Fisher machine?

Answer. In 1872.

Question 8. From whom?

Answer. I don't recollect; it came from Nevada City.

319 Question 9. When did you purchase the Victor?

Answer. In the same year.

Question 10. From whom did you purchase that?

Answer. I purchased it through Craig or the Craigs; it came from Williamson; was made by Williamson and Cory in Marysville, who had a foundry there.

Question 11. Which did you purchase first—the Victor or the Fisher?

Answer. I think I had the Fisher first.

Question 12. How long did you use the Fisher before you bought the Victor machine?

Answer. I don't recollect that.

Question 13. Was it a month or two months? Can't you give us some idea?

Answer. No; I couldn't tell that. I know we used it until we got tired of it.

Question 14. How do you know that you bought the Fisher machine before you bought the Victor?

320 Answer. Because I recollect that we did not have any other to *bend* on when we had to take that Fisher machine to the blacksmith shop to fix it up.

Question 15. You had none other then?

Answer. We had none other to put on then.

Question 16. What pressure did you carry at that mine?

Answer. Something short of a hundred feet.

Question 17. Did you ever test the Victor under any heavier pressure than that?

Answer. I never tried it in any mine but that one.

Question 18. You say you had used Little Giant machines from 1870 on?

Answer. From 1872 on or 1873 on. The later patents, we got them after that—probably not till 1873.

Question 19. Didn't you state a minute ago that you had used the different Giants from 1870 on?

Answer. Not from 1870 on; from 1872 on.

321 Question 20. In that same claim?

Answer. No.

Question 21. Did you ever use a Little Giant machine in that claim?

Answer. Never did; other claims.

Question 22. How many other claims do you own?

Answer. I do not own any now.

Question 23. How many have you owned since 1872—hydraulic mines, I mean?

Answer. In that place I owned over six hundred acres of hydraulic ground, and I had different mines on it and I worked in the different mines.

Question 24. You worked in all the mines, did you?

Answer. Yes, sir.

Question 25. Did you buy any Victor machines for your other mines?

Answer. I did not.

322 Question 26. Why?

Answer. Because I got the other machines up there second hand and they come handy; got them in the county without sending for them; they were the only ones that were for sale there.

Question 27. You did not like the Victor machine well enough to buy it and put it onto your other mines, did you?

Answer. We wasn't in the way of getting it; there was none there.

Question 28. What kind did you get?

Answer. I got the Giants; second-hand Giants.

Question 29. You say you prefer the Victor machine?

Answer. I prefer it to the Fisher.

Question 30. How was it as to the Giant machine?

Answer. We didn't have a chance to compare them.

Question 31. Did you like the Victor as well as the Giant machines?

323 Answer. No; I did not.

Question 32. The Giant was the better machine.

Answer. I liked the Giant better; yes, sir.

Question 33. Why?

Answer. I don't recollect; I don't know any reason, only we got in the use of them; didn't see the others at all after I left that country.

Question 34. Do you know why you didn't see the others?

Answer. I suppose they have gone out of use.

Question 35. What made them go out of use?

Answer. I suppose they had been supplied by other machines which took their place.

Question 36. Now, do you know when they went out of use?

Answer. I do not; I know that Victor machine was in use the last time I was there.

Question 37. How many Victor machines did you ever see in California?

324 Answer. I don't know. I have travelled through the mines, but I don't know how many of those machines I have seen.

Question 38. Did you ever see any considerable number of them?

Answer. No; I don't know as I saw a great number of them. I don't think there was a great many of them made.

Question 39. Did you ever see any in use except the one which you used?

Answer. I am not certain as to that. I have seen all machines. I have seen the Watson machine in use and others.

Question 40. From whom did you purchase your Little Giant machines?

Answer. I bought two up there, second hand, in Trinity county, and since that I have bought them of Williamson & Cory, in Marysville, or from Mr. Hoskin, through Mr. Hoskin, on the later claims.

Question 41. When you were purchasing the Little Giant machine from Mr. Hoskin and Williamson & Cory did you

325 tell them that you preferred a single-jointed machine?

Answer. No; I did not.

Question 42. Did you ever ask for a single-jointed machine like the Victor?

Answer. No; I never did.

Question 43. Was the only fault you found with the Fisher machine that it leaked?

Answer. It came apart.

Question 44. What made it come apart?

Answer. You had to work it with a long lever, and in working it round it jammed it in the joint—worked it in the joint so that it became loose.

Question 45. Then it leaked.

Answer. Yes, sir; it took a long purchase to handle it.

Question 46. The Fisher machine worked all right when you got it, didn't it?

Answer. Yes; at first, for a short time; but the joint soon began to leak—very soon.

326 Question 47. Judging from your extensive experience, to which you testified, Mr. McGillivray, which is the superior

machine—a single-jointed machine, in which all the motions of the discharge pipe are produced from one single joint, or a two-jointed machine, where the motions are obtained from separate joints?

(Objected to by respondent- as irrelevant unless the question is confined to a machine of two joints, which joints are constructed as shown in the complainants' patent.)

Question 48. I will modify the question, Mr. McGillivray, so as to ask your opinion as to which is the superior machine—such a single-jointed machine as set forth in my former question, or a two-jointed machine like the Fisher and Little Giant machines?

(Objected to by respondent- on the ground that the Little Giant is not necessarily such a machine as the Fisher machine; that the joints of the two machines are not constructed in the same way.)

Answer. The single-jointed machine, the Victor, that we used was better than the Fisher, but I would prefer the later improved Giants to either of them.

Question 49. What feature in the Little Giant machine is it that makes it superior to the Victor?

327 Answer. I don't really understand that it is superior to the use that we made of the Victor in that mine.

Question 50. In that mine you could use an ordinary hose, could you not?

Answer. You couldn't have done it and discharged the amount of water. This Victor was a large machine, and discharged a good quantity of water.

Question 51. But you could have used the ordinary hose there which was in use before any of these machines were in use, could you not?

Answer. Hose were made to stand a heavier pressure than that, but not to discharge such an amount of water as that.

Question 52. Where would be the difficulty in discharging the water?

Answer. Because if you would make a hose of the same size or circumference it would break; it would not stand the pressure. A small hose would stand it if made strong enough.

Question 53. Then the only advantage of the Victor machine over the Hose was that it was made of iron and stronger, was it?

328 Answer. Not at all; you could turn it any direction *to* chose to.

Question 54. Could you not turn the hose in any direction you chose to?

Answer. No; you couldn't turn the hose only in one direction, only by moving it a little, and a man was in danger of his life when he did so.

Question 55. Then the Victor machine was an improvement over the Hose, as far as its use in that mine was concerned?

Answer. Yes, sir; it was as good as any machine would have been in that mine.

Question 56. Do you know how it would have been with a heavier pressure; whether the Victor would have answered as well?

Answer. I never tried it on heavier pressure.

Question 57. How much under a hundred feet pressure did you have there?

Answer. I don't recollect; only a little.

329 Question 58. If you were going to purchase a hydraulic machine to-day to work that mine would you purchase a Victor or a two-jointed machine?

Answer. I would take the Victor if I could get it so large in the *board*, to take as large a pipe; but I would use a different pipe altogether to what I did at that time.

Question 59. Did you ever report to Mr. Fisher the difficulty that you found with his machine?

Answer. I never saw Mr. Fisher, to my knowledge.

Question 60. His attention was never called to the difficulty?

Answer. I know I never spoke to him about it; I don't know but I am mistaken, though. It seems to me that I—I don't recollect; I think I wrote him something about a defect of the machine to Nevada City; I don't recollect what it was.

Question 61. Are you interested in any hydraulic mines at the present time, Mr. McGillivray?

Answer. Not any; no.

Question 62. You say you used to take the Fisher machine to the blacksmith shop to get it repaired?

Answer. Yes, sir.

330 Question 63. What part of it did you have repaired at the blacksmith shop?

Answer. I have rivetted this joint together; put a rivet in to hold it together, to keep it from getting apart.

Question 64. It wore, did it?

Answer. Yes; seemed to wear in the joint.

Question 65. What became of that Fisher machine after that?

Answer. It was left there when I came away lying on the bed rock.

Question 66. Never used after that?

Answer. No; we used it off and on until we got this other one, and then quit it altogether.

Testimony of Richard Hoskin.

Re-examination of RICHARD HOSKIN on behalf of respondent- by Mr. WHEATON:

331 Question 1. Please look at the drawing before you and state what it represents.

Answer. The Clipper machine.

(Respondent- puts in evidence the drawing above referred to, marked "Respondents' Exhibit Clipper.")

(Objected to by complainant- as irrelevant and immaterial and not a proper manner of showing that the Clipper machine was a competitor of the Fisher machine.)

Question 2. In this drawing, Exhibit Clipper, what does D represent?

Answer. The lower curved section.

Question 3. What was the lower curved section?

Answer. It was connected with the supply pipe.

Question 4. What does F represent?

Answer. A discharge pipe.

Question 5. What does E represent?

Answer. The upper curved section fastened to the end of the discharge pipe.

Question 6. What does A represent?

332 Answer. The ring with the two ears attached.

Question 7. What does B represent?

Answer. One of the ears of the ring.

Question 8. What does *c* on that ring represent?

Answer. The wheels pivoted on the ring.

Question 9. Are those wheels pivoted inside or outside of the ring?

Answer. Inside.

Question 10. What is represented by J in figure 2 of the drawing Exhibit Clipper?

Answer. That is the flange against which the wheels rotate.

Question 11. Is Exhibit Clipper a correct representation of the Clipper machine about which testimony has already been given?

Answer. Yes, sir.

333 Cross-examination of Richard Hoskin by Mr. Boone:

Question 1. This "Exhibit Clipper" is a single-jointed machine, is it?

Answer. Yes, sir.

Question 2. Who manufactured those machines?

Answer. I did.

Question 3. When?

Answer. I think I made the first about 1874; I might have made them before.

Question 4. How many did you make?

Answer. I don't know. I made several of them.

Question 5. What became of those machines?

Answer. They were used for years. I know of their being used for four or five years; more than that.

334 Question 6. To whom were they sold?

Answer. I sold one, as I testified before, to Duryea and saw it used there. I used one in a claim in which I was interested in Indiana Hill for some four years. There was another sold to a party at New York Flat, in Butte county, about nine years ago, and the parties have been to me since and wanted to purchase another, but I hadn't got it on hand. I believe that machine is still in use. I think I sold another to the North Star claim in Gold Run district.

Question 7. You think?

Answer. I am satisfied of it.

Question 8. Do you know that they had one?

Answer. Yes, to the best of my knowledge and belief. I think Mr. Hussey had one, but I am not positive about that. That is all I recollect just now. They were made and kept on hand, and they were sold when I was not at the foundry. I don't know who they went to. I made them for awhile and kept them on hand.

Question 9. These small wheels marked *c* on Exhibit Clipper rotated in an inverted plane, did they not?

335 Answer. They did, sir.

Question 10. They were fastened to the ring marked A?

Answer. Not fastened to the ring.

Question 11. Pivoted to the ring?

Answer. They ran on pivots which projected into the ring.

Question 12. And the ring was connected with the upper section by the arms B and bolts?

Answer. Yes, sir.

Question 13. That is the same arrangement, is it not, as the Watson machine?

Answer. In the Watson machine he had about—not quite—half a globe—that is, much nearer a globe than that (Exhibit Clipper) machine. This had much more motion up and down than the Watson machine had.

Question 14. I am speaking of the device for holding the joint together.

Answer. The Watson machine had a lug cast fast to the
336 top elbow through which passed a bolt with an L turned in
the end on which the wheels ran, and he had a nut on top
of the bolt for tightening his wheels—tightening his joint.

Question 15. Then the difference was that in the Watson machine the arms, instead of connecting with a ring at the bottom, had the rollers attached to the lower L part of the arm; is that so?

Answer. He had no arms; he had no ring; he merely had an L bolt.

Question 16. The bolt served the same purpose as the arms B shown in the drawing Exhibit Clipper, did they not?

Answer. No, sir; the bolt could be screwed down and tightened. The arms B are permanent.

Question 17. The bolt served to connect the upper part of the joint with the lower part, did it not?

Answer. It served to connect the two parts together, certainly.

Question 18. Then it bore the same relation to the machine that the arms B in Exhibit Clipper do, did it not?

Answer. In as far as it connected the two parts of the joint together.

337 Question 19. Then instead of placing the wheels on the L part of the bolt the clipper has a ring which connects all the arms together, and the wheels are placed on that ring; isn't that so?

Answer. Yes, sir; the Watson machine had only two wheels and in the Clipper machine I had more.

Question 20. In the Clipper machine you used another wheel or two?

Answer. Yes, sir. Another thing: The Watson machine turned on the pivots in the bolts. This Clipper turned on the pivots in the ear of the ring. The center of vibration in the Watson machine was very down below. The center of vibration here (referring to Exhibit Clipper) is the center of my pivot. I have more than a semi-ball. Watson had a semi-ball and I had more.

Question 21. Was the Clipper machine made under any patent?

(Objected to by respondent- unless a particular patent is specified.)

Answer. It was made under the rifle patent. It was worthless, as all machines were, without rifles in the discharge pipe.

338 Question 22. I asked you about the machine.

Answer. That was a part of the machine. The discharge pipe is part of the machine.

Question 23. How about the balance of the machine; was that made under any patent?

Answer. Inasmuch as there was a flange and packing here and my patent for the pipe coupling calls for a flange and packing, and if this ball is to be covered with a flange, I have the cup, flange, and packing.

Question 24. Then it would be made under your patent?

Answer. Then it would be made under my patent.

Question 25. How about the Rice patent; would it not be an infringement on the Rice patent?

(Objected to by respondent- on the ground that it is already shown in the case that the respondent- owned the Rice patent.)

Answer. I think not. If I recollect, Rice claimed the pivoting of his joint on the wheels; at least so he constructed his machine. His wheels were the centre of vibration; the wheels of the
339 Clipper were not.

Question 26. Then if some other party had manufactured the Clipper machine you would not have claimed it to be an infringement on the Rice patent, would you?

Answer. I would have consulted my attorney in reference to the matter, and if he should have given me his opinion that it was——

Question 27 (interrupting). You have never consulted your attorney in regard to that?

Answer. No; I have not, because no one has been manufacturing them.

Question 28. Do you know what pressure was carried at the mines where these machines that you speak of were used—the Duryea, Indiana Hill, and New York Flat claims?

Answer. About three hundred feet in the Chalk Bluff claims, the Duryea claim, and two hundred and fifty feet or over in the Indiana Hill claim; about the others I cannot testify; I don't know.

By Mr. Wheaton:

340 Question 29. How many wheels is it practicable to place in the ring A in the Clipper machine?

(Objected to by complainant- as incompetent and irrelevant.)

Answer. There is plenty of room for a dozen more.

By Mr. Boone:

Question 30. It is owing to the size of the ring, is it not?
Answer. Yes; it is owing to the size of the ring.
Question 31. If you made the ring large enough you could put a hundred in there, could you not?
Answer. It is, of course, owing to the size of the ring and the size of the wheels.
Question 32. How many did you actually use?
Answer. About three.

By Mr. Wheaton:

Question 33. With the joint made in the way shown in "Exhibit Clipper," would not that machine stand just as high a pressure as would the lower joint in the Fisher machine?

(Objected to by complainant- as irrelevant, immaterial, and incompetent, the witness not having proven himself competent to testify.)

341 Answer. Certainly; it would carry as much pressure as the Fisher or any other machine.

By Mr. Boone:

Question 34. Would it work as well under high pressure as the Fisher machine or any other machine?
Answer. Yes, sir.
Question 35. Would it work as well as the Little Giant?
Answer. Much easier.
Question 36. It would be fully as good a machine under all pressures as the Little Giant machine, would it?
Answer. Fully as good a machine. It is an easier-working machine; the easiest-working machine I ever saw.

342 *Testimony of Geo. M. Taylor.*

Examination-in-chief of George M. Taylor on behalf of respondent- by Mr. Wheaton:

Question 1. Please state your name, age, place of residence, and occupation.
Answer. My name is George M. Taylor; my age fifty-eight years; Forest Hill is the place I have been living in for the last five or six years; I am a miner.
Question 2. How long have you been a practical miner?
Answer. Ever since 1852.

Question 3. How much experience have you had in the use of hydraulic mining machines?

Answer. My experience has been in using hydraulic mining machines for about twelve years; about twelve years I have been handling them machines, off and on.

Question 4. Did you ever work in the Indiana Hill claim?

Answer. Yes, sir.

Question 5. When and for how long?

343 Answer. I commenced working in the Indiana Hill claim about 1870; worked there for about five years.

Question 6. What kind of hydraulic mining machine did you use in that claim, if any?

Answer. Used the Clipper.

Question 7. Does this drawing, Exhibit Clipper, represent the machine which you used there?

Answer. Yes, sir.

Question 8. For what length of time did you use the Clipper machine in that claim?

Answer. I used it for the whole season between four and five years—about five years.

Question 9. What do you mean by "for the whole season?"

Answer. Well, worked about eight months at a time, and then the balance of the year there would be no water and we would lay off—not use the machine.

Question 10. How did that Clipper machine operate?

Answer. It worked well.

344 Question 11. How was it about turning, as compared with other machines?

Answer. It was easier to turn and handle than the other machines.

Question 12. How was it as to throwing a good stream of water?

Answer. It throwed a good stream.

Question 13. How did it compare with other machines in that respect?

Answer. When we worked in the claim we preferred that machine all the time, because it throwed a better stream and we thought it worked easier—we could handle it easier.

Question 14. What other machines were you using in that claim?

Answer. We were using a Giant and had another Giant laying on the bank for a whole season; didn't set it up at all on account that it had been so hard to work; didn't work as easy as the Clipper.

Question 15. Which worked the easier of the two, the Clipper that you used in that claim or the Little Giant that you used in that claim?

345 Answer. The Clipper worked the easiest.

Question 16. How far is Forest Hill from the Van Emmons claim, at Michigan Bluffs?

Answer. It is about twelve mile they call it. I have traveled it very often.

Question 17. Have you within the last few years seen the hydraulic machine used in that Van Emmons claim?

Answer. No, sir; I have not.

Question 18. How many, if any, of the Hoskin machines, known as the Dictators, have you seen used?

Answer. I could not say the exact number.

Question 19. Can you give an approximate idea?

Answer. No; I couldn't.

Question 20. Have you seen any of them?

Answer. Yes; but I have never handled any of them or used them in mining.

346 Question 21. Please give the names of such claims as you can easily think of in which you have seen the Hoskin Dictator machine used.

Answer. I couldn't say the names of the claims that I have seen them used at. There is claims that I have seen them used at, and I have forgotten the names of them.

Question 22. For how many years have you known of any one of those Dictator machines being in use?

Answer. That I couldn't say. There was some that was used in places where I worked, but how long in use I can't say.

Question 23. How long were the Dictators in use that you saw in use?

Answer. I didn't handle them myself and couldn't say.

Cross-examination of GEORGE M. TAYLOR by Mr. BOONE:

Question 1. Did you ever see a Dictator machine?

Answer. Yes, sir.

Question 2. Sure of that?

347 Answer. I have seen what they called the Dictator.

Question 3. Where did you see it?

Answer. There was some of them around Gold Hill, in the mines.

Question 4. What mine did you see it in?

Answer. I couldn't recollect the name of the mine. There is any amount of mines there that I don't know the name of.

Question 5. If you don't know the name of the mine where you saw it how do you know that you ever saw the Dictator?

Answer. I passed it and see it working and know that that was the name of the machine, just the same as you would go into a mine and see the Giant.

Question 6. Did you ever examine the machine closely?

Answer. No.

Question 7. Can you say where you have seen it at work?

Answer. I have seen it at work in the mines around——

Question 8 (interrupting). What mine?

348 Answer. I don't know the name of the mine.

Question 9. Did you ever see it working in more than one?

Answer. I think they worked it in the Gold Run mine and in the Druid mine.

Question 10. What makes you think they worked it there?

Answer. Because I passed there every day and see where they were working; but that was in another company where I was not working, and I would never go to examine the machines or anything like that unless I was working on the claim and handling it.

Question 11. Describe the Dictator machine, Mr. Taylor.

Answer. It is a machine that works on little small rollers. I have seen them took apart—just laid apart in the claim, but I never examined it enough to describe the make of it.

Question 12. How many joints did it have in it?

Answer. Two, I think.

Question 13. Was it a large or a small machine?

349 Answer. Not very large nor not very small; about medium; not as large as any of the machines that they make now—the Big Giant machines.

Question 14. Do you know who made those Dictator machines?

Answer. No; I don't.

Question 15. Mr. Wheaton asked you how many of the Hoskin machines, known as the Dictators, you had seen. How do you know who made those machines?

Answer. It was always understood that they came through Mr. Hoskin's foundry, or before they bought the foundry that they came through Mr. Hoskin some way.

Question 16. All you knew about it was what you understood from other people, was it?

Answer. Yes, sir. I never bought one of them myself.

Question 17. You say you used the Clipper machine on the Indiana Hill claim?

Answer. Yes, sir.

Question 18. When was that machine bought?

350 Answer. Must have been bought in 1871, some time, I should judge; I couldn't say for certain. I didn't buy it; I was only just in the claim handling it.

Question 19. Do you know what hydraulic machines were in the market at the time the Clipper machine was bought—the one used at Indiana Hill?

Answer. The name of them was Clipper and Dictator.

Question 20. You know that those machines were in the market then?

Answer. I think them was.

Question 21. You think. Do you know anything about it?

Answer. Well, no; because a thing like that I never put the date right down for anything unless we would be in some business where I would have to buy it. I couldn't state when they did first come in the market.

Question 22. Do you know when the Little Giant machine first came in the market?

Answer. I couldn't state what year.

Question 23. You also say you used a Little Giant machine
351 on this Indiana Hill claim?

Answer. Yes, sir.

Question 24. When was that bought?

Answer. Must have been in 1875 some time, I should judge.

Question 25. Then you had been using the Clipper machine three or four years before the Giant machine was bought?

Answer. No; oh, no.

Question 26. How long had you been using it when the Giant machine was brought to the mine?

Answer. That I couldn't state—the exact time.

Question 27. You say you bought the Clipper machine in 1871 and the Little Giant in 1875?

Answer. No; I didn't say I bought it. It was in the claim. I don't know who bought it. It was sent there by the company, and I worked it.

Question 28. When did the Little Giant machine come to the mine?

Answer. I couldn't state the date it came.

352 Question 29. It was some time, was it not, after you had been working the Clipper machine?

Answer. No; first was a Giant and a Clipper, and then the Giant worked so hard we would turn on and work the Clipper. And then we had a new Giant come, but we wouldn't set it up at all, but it lay on the bank all winter on account of its working so hard.

Question 30. Still you have not told me, Mr. Taylor, how long before the Giant machine came to the mine you had been working the Clipper machine.

Answer. I couldn't say.

Question 31. What do you mean by saying that the Clipper machine threw the best stream?

Answer. The stream was more kept together, more compact together, and wouldn't scatter.

Question 32. More compact, and scattered less than the stream that came from the Giant?

Answer. Yes, sir.

Question 23. Worked easier than the Giant, did it?

353 Answer. Yes; all the hands that worked on the claim, when they came to tend pipe they would always want to tend the Clipper.

Question 34. Did it serve in every regard, as an hydraulic mining machine, as well as the Little Giant machine?

Answer. We called it better there then.

Question 35. In all respects?

Answer. Yes; because we used it most all the time, and throwed the Giant to one side. It laid on the bank all winter, pretty near.

Question 36. Do you know whether or not the owners of the mine, when they applied for a new machine, asked for a Clipper machine instead of the Little Giant?

Answer. No, I don't. The Giant was sent there by the owners of the claim, and the men that worked there—and I was one of them—wouldn't put it up on account that we had used the other Giant and the Clipper worked so much easier.

Question 37. Did you ever inform the owners of the mine that you preferred the Clipper machine?

354 Answer. Yes, sir.

Question 38. Do you know why they did not purchase the Clipper instead of the Little Giant machine then?

Answer. I don't.

Question 39. Have you been subpœnaed to come down here, Mr. Taylor?

Answer. No.

Question 40. Who brought you down?

Answer. I came down with Mr. Joseph Hoskin.

Question 41. Mr. Hoskin went after you, did he?

Answer. Yes; he spoke to me for to come.

Question 42. Joseph Hoskin went to your place, did he, and was enquiring to find out about this Clipper machine?

Answer. No, sir; I was not up where the machine was; I was stopping at Marysville when I came down here with him.

355 Question 43. How came you to come down here on this business?

Answer. I came down just for to state what I knowed about the working of the machine.

Question 44. I understand; but how came you to come in the first place; did Mr. Hoskin come and ask you about the Clipper machine, or did you go to Mr. Hoskin and tell him what you knew about it?

Answer. He asked me if I recollected it—recollected moving and working it and putting it up—and I told him I had recollected all about it.

Question 45. Then he told you he wanted you to come down and testify in this case?

Answer. Yes, sir.

Question 46. Who worked with you on that mine?

Answer. Well, there is names without number; Mr. Nichols was foreman of the mine.

Question 47. Where is Mr. Nichols now?

Answer. I think he is in town some place.

356 Question 48. In San Francisco.

Answer. Yes, sir.

Question 49. Did Mr. Hoskin bring him down to——

Answer. I don't know.

Question 50. Did he come down with you?

Answer. No.

Question 51. How long has he been here, do you know?

Answer. I think — here to-day some time.

Question 52. Who else worked on that mine while that Clipper machine was in use there?

Answer. There was a man by the name of Pease; I don't know his first name.

Question 53. Where is he now?

Answer. He is away up north here some place. I don't know the name of the place.

Question 54. Who else?

357 Answer. Deardoff.

Question 55. Where is he?

Answer. I don't know where he is now.

Question 56. Who else?

Answer. Blaisdell.

Question 57. Where is he?

Answer. I don't know where he is.

Question 58. Any one else?

Answer. Dolan.

Question 59. Do you know where he is?

Answer. I think he is in Sacramento some place. I see him a couple of months ago; he said he was in Sacramento.

Question 60. Any one else?

Answer. Yes; there was two Nicholas brothers; they worked with it.

358 Question 61. Tell us where they are, if you know?

Answer. I think they are in England; went back there. They worked in the mine.

Question 62. Do you know the present residence of any one who worked with you at that time on that mine?

Answer. I think there is some of them around Gold Run.

Question 63. Give us their names, please.

Answer. A man by the name of Willard, he worked there, but he worked but a very short time.

Question 64. Is that all that you recollect?

Answer. If I could see the time book I could pick out lots more men, but I have forgotten their names.

Question 65. Who were the owners of that mine?

Answer. Hoskin and brother.

Question 66. Do they own the mine now?

Answer. I think they do.

359 Question 67. Then you have been in the employ of Mr. Hoskin, have you, for the last several years?

Answer. Not for the last several years; for the last five or six, pretty near, I have been in Forest Hill.

Question 68. But at the time you were working with the Clipper machine you were in the employ of defendant Hoskin?

Answer. Yes, sir.

Testimony of Jason Brink.

Examination-in-chief of JASON BRINK on behalf of respondent-by Mr. WHEATON:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Jason Brink; my age, forty-three years; I live in Gold Run, Placer county, and my business is mining.

Question 2. What experience have you had in the use of hydraulic mining machines?

360 Answer. I have used the Dictator, if that is what you want to know.

Question 3. Have you used any other machines besides the Dictator?

Answer. Yes; I used the Giant awhile.

Question 4. Where did you use the Dictator machine?

Answer. I used it in a mine situated down at Indiana Hill, adjoining the Hoskin claim, called the Hawkins mine.

Question 5. It got the name of the Hawkins mine before the Hoskins owned it?

Answer. Yes, sir.

Question 6. How many Dictator machines did you use there?

Answer. I used two.

Question 7. For how long?

Answer. Well, several years; I don't recollect exactly how long.

Question 8. How did those machines work?

361 Answer. They worked first rate, to my notion.

Question 9. Have you ever used the Fisher machine?

Answer. I have not.

Question 10. Have you ever used the Little Giant machine?

Answer. Yes, sir.

Question 11. How did the working of the Dictator machine compare with the working of the Little Giant?

Answer. I liked the Dictator a little the best, because it was a little the easiest to move—the pipe.

Question 12. Do you remember the pressure you had on the claim in which you used the Dictator?

Answer. I think I had about two hundred feet.

Question 13. Were you an owner in the claim where you used the Dictators?

Answer. Yes, sir.

Question 14. Up to what time did you continue to use the Dictators in that claim?

362 Answer. Up to about two years ago.

Question 15. For how many years, as near as you can fix the time, were those Dictator machines worked in that mine?

Answer. The first one I got was in 1871, some time.

Question 16. How constantly was that machine kept in use from 1871 up to two years ago?

Answer. It was kept in use all the time up to the last run.

Question 17. About what time did you purchase the other Dictator machine that you used in that mine, as near as you can recollect?

Answer. I purchased two at the same time.

Question 18. Did you have more than two machines there?

Answer. I had only two.

Question 19. Then you purchased them both in 1871?

Answer. Yes, sir.

Question 20. Was one kept at work as much as the other in
363 that claim?

Answer. No, sir; I had the two, but there was a big piece of clay rolled down and rolled onto one and it broke.

Question 21. Why did you cease using the Dictator two years ago in that claim?

Answer. Because it was too small. I wanted to run more water.

Question 22. What machine did you get in place of it?

Answer. I borrowed a Giant.

Question 23. When did you last see a Dictator machine at work?

Answer. I saw one at work last Monday. This is Saturday.

Question 24. Whereabouts?

Answer. In a mine located near Gold Run called the Druid claim.

Question 25. Do you know how long that Dictator machine had been at work?

Answer. I don't; they used it awhile last year I know.

364 Question 26. Were those Dictators all single-jointed machines?

(Objected to by complainant- as leading.)

Answer. Yes, sir.

Question 27. Which would you prefer to purchase and use, a Dictator machine or a Little Giant machine, provided they were both of the same capacity?

Answer. Well, if they was both of the same capacity, I believe I would just about as soon have a Dictator as to have a Giant.

Question 28. Did you ever know the machine known as the Clipper machine?

Answer. I have seen it.

Question 29. Where and when, as near as you can tell?

Answer. I think the first time I saw it was in 1866 or 1867, down in the Hoskins claim, in Indiana Hill.

Question 30. How was it working then?

Answer. I didn't pay much attention to it.

Question 31. Do you know whether or not it was then at work?

365 Answer. Yes; there was water running through it.

Question 32. How did the Dictator which you saw last Monday in the Druid claim work?

Answer. First rate, as far as I knew; I didn't hear anybody finding fault with it.

Cross-examination of JASON BRINK by MR. BOONE:

Question 1. There are some people who still use the old hose, are there not, Mr. Brink?

Answer. I believe there is one place where they used hose; that is down to the place called Buckhorn Hill, down below Gold Run about three miles; there is a little bank they have there, where they have a little water that they catch up in ditches along the cañons; that is the only hose that I have seen used around there in a long time; I didn't see those used; I seen them laying there.

Question 2. What business connection or other connection have you with the defendants Hoskin?

366 Answer. None—that is, to speak of.

Question 3. Have you at any time had business or other connection with them?

Answer. Nothing more than Joseph Hoskin and myself had a cañon there together.

Question 4. You were partners?

Answer. Not now; we ain't.

Question 5. You were at one time?

Answer. We had a little cañon there that we used together.

Question 6. Did you work that mine?

Answer. No, sir; only ran the tailings through it.

Question 7. In whose mine was it that you worked the Dictator machine?

Answer. I am one of the owners, and then there is four more partners.

Question 8. Who are they?

367 Answer. John Beach, John Anderson, and Jacob Beal—no, there is three other partners. I own fifths in it.

Question 9. Have you bought any hydraulic mining machines since 1871?

Answer. There is only one that I recollect of. I got that with a claim that I bought. I bought a claim and the machine was in the claim.

Question 10. What kind of a machine was that?

Answer. That was a Dictator.

Question 11. Then you have used in your mine Dictator machines altogether, have you?

Answer. Until the last run; then I used the Giant.

Question 12. When was the last run?

Answer. Two years ago.

Question 13. ——.

——. Yes; I used the Giant then.

Question 14. Why did you throw the Dictators to one side?

368 Answer. Because their capacity was not large enough to carry the water that I wanted to use, and I wanted to run one stream.

Question 15. Then, if I understand you, you have bought no hydraulic mining machines, except the one you speak of, which was left in a claim that you bought since 1871?

Answer. No, not that I know of; I don't recollect any.

Question 16. You are not a practical miner, are you?

Answer. Yes, sir.

Question 17. You don't go in and do the work yourself?

Answer. Yes; I do just as much as any of them. I have worked at it twenty years.

Question 18. Then you have handled these machines yourself, practically?

Answer. Yes, sir.

Question 19. You have handled the dictator?

Answer. Yes, sir.

Question 20. And you have also handled the Little Giant?

369 Answer. Yes, sir.

Question 21. What is the pressure on that mine?

Answer. About two hundred feet.

Question 22. What is the size of the dictator that you used there?

Answer. I believe they are calculated to be about seven inches, inside diameter.

Question 23. What is the diameter of the nozzle—the discharge pipe?

Answer. I used different nozzles; sometimes used three and a half, sometimes four inches.

Question 24. Four inches is the limit, is it—the largest you used?

Answer. No; I believe I have used larger; I don't recollect that I have; I have used four.

Question 25. You say you think you have used larger?

Answer. I don't know that I have. I don't recollect that I have used larger than four. I have used four.

370 Question 26. What is the size of the Little Giant machine that you used?

Answer. I don't know what the size of that is.

Question 27. Is it larger or smaller than the Dictator?

Answer. It is larger.

Question 28. Did you ever use a large- Dictator than one with a four-inch discharge?

Answer. I don't know that I have—that is, a Dictator.

Question 29. Do you know how the Dictator would work with a larger nozzle?

Answer. You can't get much larger on unless the butt was made larger.

Question 30. I mean a larger machine.

Answer. Don't know how it would be.

Question 31. Then all your testimony, which you have given in regard to the compar*i*tive merits of the Dictator and Little Giant machines, has been with reference to a Dictator machine with a seven-inch inlet, has it?

371 Answer. Yes, sir.

Question 32. Don't you know, as a matter of fact, Mr. Brink, that all hydraulic mining machines of that size have been discarded for larger sizes by hydraulic mines generally.

Answer. I don't know as they have. They *h*ain't all been discarded that I know of.

Question 33. You discarded the small Dictator for the large Giant, did you not?

Answer. Yes, sir; I wanted to run more water.

Question 34. Is it desirable to run more water in a hydraulic mine, if you can?

Answer. Yes, sir.

Question 35. Then don't you know that hydraulic miners have discarded small-sized machines for larger-sized machines that will carry more water?

Answer. They *h*ain't all discarded them.

Question 36. An owner of a mine in purchasing a hydraulic machine will always purchase the largest size that he can carry on his mine, won't he?

372 Answer. Yes, sir; as a general thing.

Question 37. Then, in view of the larger stream of water carried by the Little Giant machines, of what practical use is the Dictator machine of that size that you speak of?

Answer. I don't understand.

Question 38. Question 37 repeated.

Answer. It is practical yet. A fellow can put two of them in the diggings and run water enough.

Question 39. Then that is the only way it would be of practical use—by putting two Dictators in place of a single Giant machine carrying a large stream?

Answer. Yes, unless you can make a Dictator larger.

Question 40. You say you never saw a larger one?

Answer. I never saw a larger one.

By Mr. WHEATON:

Question 41. Is it not a fact that a great many mines use these smallest-sized Little Giant machines?

Answer. Yes, sir.

373 Question 42. As small as seven-inch inlet?

Answer. I think it must be as small as that. I don't know of any in use now, but there were Little Giants in use as small as that.

By the MASTER:

Question 43. Do you know of any reason why the Dictator machines could not be made as large as the Little Giant machines now generally used?

Answer. No, sir.

Question 44. Would they be effective machines if so made, in your opinion?

Answer. I think so.

By Mr. BOONE:

Question 45. You never saw one?

Answer. No, sir.

Question 46. Do you know anything about it?

Answer. I know by changing nozzles. If you get a three-and-a-half-inch nozzle you get a good stream, and if you enlarge the nozzle there ain't water enough there to use it.

374 Question 47. Did you ever use a Dictator under a greater pressure than two hundred feet?

Answer. No, sir.

Question 48. Do you know how it would act under a greater pressure than two hundred feet?

Answer. I do not.

Question 49. Do you know how a Dictator would act under a greater pressure than two hundred feet, with a larger discharge than four inches?

Answer. I don't suppose it would act as well as if it was larger.

Question 50. I ask you if you know. Can you testify as to how it would act?

Answer. I think the water wouldn't go through the casting fast enough to make a smooth stream—that is, there would not be water enough there to fill the nozzle in good shape.

Question 51. But suppose there was water enough to fill it in good shape—that the whole machine was made larger?

375 Answer. I think it would work a great deal better.

Question 52. A great deal better than what?

Answer. That is, it would work accordingly as it does under two hundred feet pressure.

Question 53. You know that, do you?

Answer. I don't know it, but I judge it from my experience.

Question 54. You have had no experience except with two hundred feet pressure and with a seven-inch maximum inlet?

Answer. That is all; I never had any experience outside of that.

By Mr. Wheaton:

Question 55. From your experience with the machines, you think the larger the Dictator was made the better it would work, do you?

Answer. Yes, sir; I do, from the experience I have had with them.

By Mr. Boone:

376 Question 56. Do you mean with reference to the movement and operation of the stream?

Answer. I don't know how that would be. If that is what you mean, I don't understand you.

Question 57. Then you don't know how the machine would work under any greater pressure than that which you had?

Answer. No; I do not.

(Recess until 3 o'clock p. m.)

Testimony of Ed. H. Willard.

Saturday, *December* 9, 1882—afternoon.

Present: Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for respondent-.

Examination-in-chief of Edward H. Willard on behalf of respondent- by Mr. Wheaton:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Edward H. Willard; my age, thirty-eight years; my place of residence, Gold Run, and I am at present engaged in farming and wood business.

377 Question 2. How long, if at all, have you been a practical miner?

Answer. Twenty years.

Question 3. What experience, if any, have you had in the use of hydraulic mining machines?

Answer. I have been altogether engaged in hydraulic mining for twenty years.

Question 4. In what part of the State?

Answer. Placer and Nevada counties.

Question 5. When, if ever, did you work in the Hoskin claim at Indiana Hill?

Answer. Six or seven years ago; I could not tell positively which.

Question 6. How long did you work there?

Answer. Between two and three weeks.

Question 7. What machines were in use there then?

Mr. Boone: We object to this as irrelevant and immaterial. 378 The infringement sued for in this case only sues for machines sold since 1879, and what was used prior to that time is irrelevant and immaterial unless it is shown that the machines were in the market since the time of the infringement claimed for. This objection applies to all the prior testimony relating to machines used prior to 1879.

Answer. One Clipper machine.

By Mr. Wheaton:

Question 8. Any other?

Answer. There was. I think it was a Giant, but I wouldn't state positively.

Question 9. How did that Clipper machine work?

Answer. It worked satisfactorily in every respect, according to my notion.

Question 10. How did it work as compared with the other machine that was in the same claim?

Answer. Worked easier. In fact, I would state it was the best machine that I ever worked—that one Clipper that I used there.

Question 11. Where else, if at any place, did you ever use a Clipper machine?

379 Answer. I used one at Chalk Bluff, Nevada county.

Question 12. In what mine?

Answer. What is called the Nevada mine, the Hayward mine, formerly owned by Rose and Duryea.

Question 13. How long did you use a Clipper machine in that mine?

Answer. I used it one season and part of another.

Question 14. What seasons were those?

Answer. Five years ago and four years ago.

Question 15. How did that Clipper machine work?

Answer. It worked satisfactor-y. We used it until we got through with it.

Question 16. How do you mean by getting through with it?

Answer. Well, we needed machines of larger capacity.

Question 17. Please state whether or not you ever used any of the Hoskin Dictator machines.

380 Answer. I did. I think I used the first two that were made in Gold Run; the first used there.

Question 18. How many of the Dictator machines have you personally used?

Answer. Three.

Question 19. For how long did you use those Dictator machines?

Answer. I used these two two seasons; afterwards I used one in the Nevada mine one season and part of another.

Question 20. How did those Dictator machines operate?

Answer. They were satisfactory.

Question 21. How did they operate as to durability?

Answer. I don't see as they are any more liable to get broken than any other machine. Of course, they all get broke by caves.

Question 22. Were the Clipper and Dictator machines that you refer to single or double jointed machines?

381 Answer. They had but one joint, single joint.

Question 23. Have you ever used the Fisher machine?

Answer. I have never seen it.

Question 24. Have you ever used the Little Giant machine?

Answer. I have.

Question 25. To what extent have you used the Little Giant machines?

Answer. I have had them, worked with them, ever since they came out, after the second season. After the Dictators came out I have used sometimes one Giant and sometimes a Dictator with them, and sometimes a Clipper; generally used two.

Question 26. How does the working of the Clipper machine compare with the working of the Little Giant of the same capacity?

Answer. The Clipper moves easiest, works better, does not take so much power to move it. I think the stream of the Clipper is better.

382 Question 27. Was there any bolt through the Clipper machine anywhere which divided the water, as there was in the Little Giant?

Answer. There was not.

Question 28. How did the working of the Dictator machine compare with that of the Little Giants of the same capacity?

Answer. The Dictator moves the easiest in use. The Dictator that I used in the Nevada mine was about as complete as anything; throwed the best stream. I used no nozzle on it during the time that I used it.

Question 29. What was the size of the stream that you threw with the Dictator there?

Answer. I could not state; it was either four or four and a half; small, compared to now.

Question 30. How much pressure did you have when you used the Clipper machines?

Answer. In the Hoskins claim, as near as I could guess, probably three hundred feet; perhaps a little more.

383 Question 31. How much pressure did you have with the Clipper that you used in the claim at Chalk Bluffs?

Answer. Not over two hundred feet.

Question 32. How much pressure did you have where you used the Dictators?

Answer. Two hundred.

Cross-examination of **Edward H. Willard** by Mr. **Boone**:

Question 1. When did you commence work in the Hoskin claim?

Answer. I think it was six years ago; six or seven.

Question 2. How long did you work there?

Answer. Three weeks.

Question 3. What did you do in the mine while there?

Answer. I was foreman in the absence of the foreman, who was sick.

384 Question 4. What machines were there at that time?

Answer. A Clipper, and I could not state whether a Giant or what. We had two.

Question 5. Are you sure there was a Clipper there?

Answer. I am sure.

Question 6. Why are you sure that there was a Clipper and not sure whether there was a Giant?

Answer. That was the first of the kind I had ever seen.

Question 7. You had seen Giants before, had you?

Answer. I had used them.

Question 8. What was the size of this Clipper machine?

Answer. I couldn't state that. I think the inlet was nine inches, but I could not state positively.

Question 9. Did you ever operate the machine yourself?

Answer. I did.

Question 10. How often?

385 Answer. Altogether.

Question 11. There was three weeks that you handled it yourself?

Answer. Not night and day, but during the daytime, of course.

Question 12. Is that the work of the foreman of a mine, to handle a pipe?

Answer. It was at that time.

Question 13. How many men had you employed?

Answer. Some fifteen.

Question 14. And you operated this Clipper?

Answer. Operated both of them.

Question 15. You operated two machines?

Answer. Between times. We had two men—one besides myself. The foreman's duty was to operate one machine.

Question 16. You don't know what the other machine was?

386 Answer. I could not state what it was.

Question 17. Was it a one-jointed machine or a two-jointed machine?

Answer. I couldn't state that.

Question 18. What did you say was the pressure at that mine?

Answer. I think about three hundred feet.

Question 19. You think; is that the nearest you can come to it?

Answer. Of course, I never measured it; I can guess at it?

Question 20. Are you sure it was over two hundred feet?

Answer. I am sure of that. A man can measure the bank with his eye.

Question 21. That is what you depended on, the measurement with your eye, is it?

Answer. Yes, sir.

Question 22. Why is — that you recollect the Clipper machine so distinctly and not the other machine that was there?

387 Answer. Because it was the first one that I had seen, and I took particular notice of it.

Question 23. How many different kinds of machines did they have at Chalk Bluffs?

Answer. Three.

Question 24. What were they?

Answer. Giant, Dictator, and Clipper. We had more machines, but not different kinds. We had two or three Giants.

Question 25. How many Clippers?

Answer. One.

Question 26. How many Dictators?

Answer. One.

Question 27. What was the size of the Clipper machine?

Answer. The inlet, nine inches.

Question 26. What was the size of the Little Giant?

388 Answer. We had two different kinds—one eleven-inch inlet, one nine-inch inlet.

Question 29. Which machine did you use most at Chalk Bluffs?

Answer. We had four different claims. We used the Giant and the Dictator alone. We used the Clipper alone and the Giants alone.

Question 30. That is, you used the Clipper in one mine, the Giants in another, and the Dictator in another.

Answer. That is it.

Question 31. Did you use them all with the same pressure?

Answer. Differences in pressure.

Question 32. What was the pressure where the Giant machine was used?

Answer. Probably two hundred feet; a little over two hundred feet.

Question 33. What was the pressure where the Dictator machine was used?

389 A. Nearly two hundred feet.

Question 34. What was the pressure where the Clipper machine was used?

Answer. About the same; not much difference.

Question 35. Then it was the same pressure for all of them, was it?

Answer. No; there was two separate benches. Where the Giants was used was the highest pressure.

Question 36. Did you ever try the Clipper on the pressure where the Giant was used?

Answer. We have had it; yes; in different places.

Question 37. You had placed the Clipper under the same pressure with the same stream the Giant was used on?

Answer. Not in the place where the greatest pressure was. You understand that we had several Giants. We have one placed where the pressure was two hundred and fifty. The Clipper never was in that place.

390 Question 38. You used that pressure with the Giant entirely?

Answer. Yes, sir.

Question 39. Why did you use the Giant on that one entirely?

Answer. Because we threw more water—we needed more water.

Question 40. Do you know what machine is universally used in hydraulic mines?

Answer. Several different kinds.

Question 41. What kinds are they?

Answer. These three are the only kinds I have seen. I have never seen Mr. Fisher's.

Question 42. How many Clipper machines did you ever see in the mines?

Answer. Two that I can remember. I might have seen more but I don't remember.

Question 43. How many Dictator machines did you ever see in the mines?

391 Answer. I have seen at least three.

Question 44. How many Little Giant machines have you seen?

Answer. I couldn't state that.

Question 45. Can't you give us an approximate number?

Answer. I have seen a dozen, at least.

Question 46. Never more than a dozen?

Answer. I expect I have.

Question 47. How many hydraulic mining machines of all kinds did you ever see?

Answer. That is asking me too much; I never kept count.

Question 48. You have been in a number of mines, have you not?

Answer. I have.

Question 49. Don't you know that the Little Giant machines have been used in most all hydraulic mines on this coast?

392 Answer. I have not been out among all the mines on this coast.

Question 50. Where you have been, has not the Little Giant machine been generally used?

Answer. There is, perhaps, more of them; yes.

Question 51. You say you have never seen but two Clippers and three Dictators, and you have seen a large number of Giants; that is all you know about it, is it not?

Answer. I have seen them, certainly.

Question 52. Do you know whether or not the Clipper or Dictator machine have been on the market for the last ten years for sale?

Answer. I know that I have had duplicate castings of the Giant.

Question. I am speaking of the Clipper and Dictator?

Answer. What do I understand; a piece of a casting, would you call that answering the question?

Question 54. No; I want to know what machines have been on the market during the last ten years?

393 Answer. I can't tell you.

Question 55. Then, if I understand you, Mr. Willard, as a hydraulic miner, you prefer a Clipper or Dictator machine to a Little Giant machine?

Answer. I do if they were large enough capacity.

Question 56. Do you know whether or not the Clipper or Dictator machines would operate successfully under heavy pressures and with large streams of water?

Answer. Three hundred feet has been used.

Question 57. Please answer my question just as I ask it.

Answer. How much do you consider heavy pressure—five hundred feet?

Question 58. Say five hundred.

Answer. I never used that much pressure.

Question 59. Have you ever used three hundred feet?

Answer. Yes, I have; with the Clipper and Giant, as high as three hundred feet.

394 Question 60. What size stream did you run?

Answer. Four or four and a half inch stream.

Question 61. Did you ever run a larger stream than four and a half inches with the Clipper or Dictator machine?

Answer. I have not, to my remembrance.

Question 62. And you never used the Clipper machine with over three hundred feet pressure with a four-and-a-half inch stream?

Answer. I have not.

Question 63. Do you know whether or not the Clipper or Dictator machine would work successfully under greater pressures and with larger streams?

Answer. I do not.

Question 64. Do you know whether or not the Little Giant machine would?

Answer. I do not, not having used it with over that pressure.

Question 15. Did you never use a Little Giant machine under greater pressure?

395 Answer. I have. I misunderstood you. I thought you said the Dictator.

Question 66. Did it work successfully?

Answer. It worked very well.

Question 67. Then you know that a Little Giant machine would work successfully with greater pressure and larger stream? You know that from practical experience, do you?

Answer. You mean moving?

Question 68. Moving and operating.

Answer. I know that it is hard to move without a deflector.

Question 69. Question 67 repeated.

Answer. Do you mean the handling of the machine or the strength of the machine?

Question 70. Taking it all together, it was a practical machine under large pressures and throwing a heavy stream, was it not?

Answer. Yes, sir; the Little Giant works very hard under
396 that pressure.

Question 71. Do you know whether any other machine would work under that pressure or not?

Answer. I do not.

Question 72. Do you know why the Clipper machine and the Dictator machine were not placed in the market in place of the Little Giant machine?

Answer. I do not.

Question 73. Did you ever order a hydraulic mining machine?

Answer. Never have a whole one; duplicate castings, but never a whole one.

Question 74. Then all the comparisons you have made between the Clipper and Dictator machines and the Little Giant machine have been made with reference to the different pressures under which they were worked within your knowledge, were they not?

Answer. Under the same pressure.

Question 75. But you have just testified that you have never worked the Dictator and Clipper machines under the same pressure that you used with the Giant?

397 Answer. I have not.

Question 76. Question 74 repeated.

Answer. That is it.

Question 77. You were working for Mr. Hoskin when you were working with the Clipper machine, were you not?

Answer. I was, when I worked three weeks. In Nevada county I was working for Mr. Hayward.

Question 78. Do you know what effect heavy pressures have on the Clipper or Dictator machines?

Answer. In what way?

Question 79. In making it work practically as a hydraulic moving machine. Do you know, from your own knowledge or from your own experience, what effect such heavy pressures would have on those machines?

Answer. I do not.

By Mr. Wheaton: Do you know of any effect that a high pressure would have on those machines except to make the machine throw more water and cut a bank faster?

398 Answer. I do not.

By Mr. Boone:

Question 81. Doesn't a heavy pressure on a machine tend to make it work harder than a light pressure?

Answer. Sometimes I have seen machines that it did and sometimes not; that is a thing that I never could study out.

Testimony of Philip Nichols.

Examination-in-chief of PHILIP NICHOLS on behalf of respondent- by Mr. WHEATON:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Philip Nichols; my age thirty-six years; I reside in Colfax, in this State, and I am a miner.

Question 2. How long, if at all, have you been a practi*cle* miner?

Answer. I have worked in the mines all my lifetime—I might say ever since I was able to work.

399 Question 3. What experience, if any, have you had in the use of hydraulic mining machines in California?

Answer. I have worked in hydraulic mines ever since 1866 up to within the last year and a half, with the exception of a month or two of the time—I mean during the winter season; in the fall I would work somewhere else.

Question 4. When, if ever, did you work in the Hoskins claim at Indiana Hill?

Answer. I think it was 1873 when I commenced to work for them first; I ain't positive to the year, but I think it was in 1873.

Question 5. How long did you continue to work in that claim?

Answer. I worked two seasons, as near as I can judge; it was a little late, I think, when I commenced the first season; I ain't exactly positive.

Question 6. What machines, if any, did you use in that claim?

400 Answer. I used the Clipper.

Question 7. Any other?

Answer. And Giant.

Question 8. Which was the better working machine?

Answer. The Clipper, sir.

Question. 9. In what respects was the Clipper the best working machine of those two?

Answer. It worked the easiest. I could handle it any place, where I couldn't handle the Giant.

Question 10. What experience, if any, have you had in the use of the Dictator machines?

Answer. I never worked any of them, sir.

Question 11. Have you ever seen any of them work?

Answer. I have.

401 Objection. Mr. BOONE: I object to any and all testimony relating to the machines in use prior to September 2nd, 1879, unless it is shown that similar machines were manufactured and on the market since that time.

By Mr. WHEATON:

Question 12. To what extent have you seen the Dictator machine work? Please describe in a general way as near as you can.

Answer. I have seen them work in a number of claims at Gold Run.

Question 13. How many years?

Answer. I couldn't tell you to a year, but I should judge from 1869 or 1870 up to 1878 or 1879; 1877, anyhow.

Question 14. How did the Dictator machines that you saw work compare with the Little Giant machines of the same capacity?

Answer. Well, in most of the claims where they had two machines ready for running water and they wanted to run only one they would run the Dictator, because it would work so much easier, and leave the Giant be idle.

Question 20. In such cases how did the capacity of the
402 Dictator machine compare with the capacity of the Little
Giant? By capacity I refer to the size of the inlet and the outlet end of the nozzle.

Answer. I don't think I ever saw any larger Dictator up there than a nine-inch inlet. I think that is the largest I ever saw there. That is about the size of a number 2 Giant, I presume. So far as the stream is concerned, the Dictator always throwed the best stream.

Question 21. Have you ever seen a Fisher machine?

Answer. I have not.

Question 22. What was the highest pressure that you ever saw either a Clipper or a Dictator machine used under?

Answer. I used a Clipper there on the Miami claim for Hoskin Brothers, where they called it at the time—I never saw it surveyed—called it pretty close on to three hundred and fifty feet.

Question 23. Where was that Miami claim?

Answer. Right above the cement mill on the Indiana Hill.

403 Question 24. How far from the Hoskin claim at Indiana
Hill?

Answer. That was the Hoskin claim; also the Hawkins claim belonged to them.

Question 25. They had two claims, one named the Miami and the other the Hawkins claim?

Answer. Yes, sir; I was foreman there for them.

Question 26. How long did you work with that Clipper machine of the Miami claim?

Answer. I worked with it two seasons, till I run the claim out. I don't know whether I finished it up the second season or whether I run it a little on the third season. I ain't certain.

Question 27. What seasons were those?

Answer. 1875 and '6.

Question 28. In whose employ were you as foreman of that Miami mine when you were using that Clipper machine?

404 Answer. Hoskin Brothers.

Question 29. Joseph Hoskin and Richard Hoskin?

Answer. Yes, sir.

Question 30. Could you see any results produced by working the Clipper machine under three hundred and fifty feet head pressure, as compared with working it under three hundred feet pressure, other than such results as would be found by working the Giant under the same different pressures?

Answer. Well, I left the Giant lay idle and worked the Clipper in preference there all the time for two seasons. I had the two machines in the diggings all the time so that in case of accident I would have the other to put on, but I worked the Clipper all the time.

Question 31. What was the result of using a higher pressure on the Clipper machine?

Answer. It worked so much easier—so much nicer.

405 Question 32. Do you know what became of that Clipper machine?

Answer. I do.

Question 33. What?

Answer. It was sold to Jones, at Iowa Hill. I think the man's name was Jones. He kept the hotel at Iowa Hill.

Question 34. How long had that Clipper machine been in use, to your knowledge, when it was sold to Jones, of Iowa Hill?

Answer. I worked it three seasons, sure, if not four. I ain't sure whether I worked it four seasons or not.

Question —. Do you know what price Jones paid for it?

Answer. I couldn't be positive about that, but I think he sold it very cheap. I told Joe Hoskins at the time I wouldn't have sold it. He sold it for something like fifty or seventy-five dollars. I know his brother found fault with him about it.

406 Cross-examination of PHILIP NICHOLS by MR. BOONE:

Question 1. You say you worked in the Hoskins claim at Indiana Hill?

Answer. Yes, sir.

Question 2. By whom were you employed?

Answer. Hoskin Brothers.

Question 3. What were they doing at that time?

Answer. They were operating in the pipe business; had a tin shop at Gold Run—you could call it a tin shop, tin and iron—one at Gold Run and one at Dutch Flat.

Question 4. Were they manufacturing hydraulic mining machines there?

Answer. Yes, sir.

Question 5. What kind of machines were they manufacturing?

407 Answer. There was Giants, Clippers, and Dictators—three machines?

Question 6. You say you preferred the Dictator and Clipper machines to the Little Giant?

Answer. I have never used a Dictator machine.

Question 7. You prefer the Clipper.

Answer. Yes, sir.

Question 8. Did you tell Mr. Hoskin so?

Answer. I did, sir.

Question 9. What did he say?

Answer. He said he liked them himself. This was Joseph Hoskin. He was there most of the time.

Question 10. Still he kept on manufacturing Little Giants, did he?

Answer. Yes; I suppose so.

Question 11. You say there was a Clipper machine and a Little Giant machine on that mine?

408 Answer. There was, sir.

Question 12. What was the size of the Little Giant machine?

Answer. Number 3, I guess—eleven-inch inlet.

Question 13. How do you know that that was a Little Giant machine?

Answer. That is what they told me; that is all I know.

Question 14. What who told you?

Answer. Us boys see it in the paper, the name of the Little Giant. I used to read a little in the papers, anyway.

Question 15. And that is the way you knew it—the only way—seeing them called the Little Giant in the papers?

Answer. Hearing other parties speak about them.

Question 16. What other parties did you hear speak of them as the Little Giant machines?

409 Answer. Most all the miners.

Question 17. Describe that Little Giant machine, won't you, please?

Answer. I had a Giant there with me. In the flange you have got a piece of leather, round, to make the joint. In mine there was a piece of leather; just dropped it right down. There was a steel ring round the joint, which was bolted on with small bolts.

Question 18. Didn't most all the machines have a piece of leather on to make a tight joint?

Answer. They had leather on, but a different kind from the way I was using, sir.

Question 19. And it had a steel ring bolted on, you say?

Answer. It had a steel ring bolted onto the top joint.

Question 20. Was that all the difference there was between the Clipper and the Little Giant machine?

410 Answer. O, no; the Clipper is a different machine altogether.

Question 21. We want to know the difference in construction; how that Little Giant machine was made.

Answer. The Giant has a bolt going through the center of it in order to fasten it together, and the Clipper has got a ring round it with these three wheels. These arms project up and you put your top on and your bolts go through those two little arms, which is fastened on top of the eye.

Question 22. Is that the best description that you can give us of the Little Giant machine that you used there?

Answer. Yes, sir; If I could draw well I could show it to you.

Question 23rd. How was the discharge pipe of the Little Giant moved?

Answer. By main strength.

411 Question 24. How was it connected with the upper curved section of the machine?

Answer. Two bolts.

Question 25. Where were those bolts placed?

Answer. On the sides. There was a flange at the butt of the pipe.

Question 26. How many motions had the discharge pipe?

Answer. The discharge pipe of the Giant up and down was all the motion it had, unless you pushed it sideways. You could push it sideways and up and down from motions.

Question 27. How many motions had the Dictator?

Answer. Had the same.

Question 28. Were these two machines used under the same pressure?

Answer. Yes; well, I couldn't say within a foot, but it was
412 on the same ground—the same as one setting on one side of
the room here and the other on the other.

Question 29. Run under the same head exactly, both of them?

Answer. As near as I could run the water, you know. Sometimes I would want to run a bigger nozzle on one machine than I would on the other.

Question 30. Would they run for the same reservoir?

Answer. We took water from the ditch. We had no reservoir.

Question 31. Run from the same ditch?

Answer. Yes, sir.

Question 32. What was the height of the head of the water from the machine?

Answer. I have run it over three hundred feet, I suppose.

Question 33. I ask you, what was the height of the head at that
point at that time?
413 Answer. You don't state from here.

Question 34. At that time when you say you were running these two machines side by side?

Answer. At what claim? I have seen them in two claims.

Question 35. At what claims were you running them side by side?

Answer. Either the Miami or the Hawkins.

Question 36. At what height was it in either?

Answer. We called it in the Hawkins two hundred and eighty to three hundred feet. We had it surveyed by a surveyor, Mr. Hoskin did, and he said it was two hundred and eighty feet, I think.

Question 37. Do you go by what Mr. Hoskin told you? Do you swear that it was two hundred and eighty feet because Mr. Hoskin told you so?

Answer. I had no reason to disbelieve him.
414 Question 38. Is that the knowledge that you swear by?
Answer. That is.

Question 39. And nothing else?

Answer. Nothing else.

Question 40. What was the largest-sized Clipper machine you ever saw?

Answer. I never saw only that one.

Question 41. How many Little Giants did you ever see?

Answer. I don't know; I have seen ten or a dozen—fifteen; I never count them; they work them all round that little district; I never bothered much about other people's claims; my business kept me at home generally.

Question 42. Hydraulic mines in general—what machine did they use in that district where you came from?

Answer. Dictators and Giants are used most.

415 Question 43. How many Dictators did you ever see?

Answer. I have seen a good many.

Question 44. How many? Tell us.

Answer. I know Mr. Willard there used to work two, I think, and Noyes used to work one up on the North Star claim; Judd used to work one there; one — the Indiana Hill claim; Mr. Brink either worked one or two—I ain't certain—and on the Fish Hawk; there was lots of claims above us where they said they had them, but I don't know about that.

Question 45. That is all you ever knew of working?

Answer. Yes, sir.

Question 46. That is four Dictators that you have seen working?

Answer. I don't know how many it is; I have not counted
416 them now when I have told them to you.

Question 47. Do you know the size of the largest Dictator machine you ever saw?

Answer. I could not tell you.

Question 48. We- they large or were they small, as compared with the large Little Giants?

Answer. The large Little Giants—I could not tell you anything about them, either. I never worked no larger than number 3. Eleven-inch inlet is the largest I ever worked.

Question 49. You say you worked the Clipper machine for two seasons on the Hoskin claim?

Answer. I worked three seasons and a part of four seasons.

Question 50. How many times was the machine repaired during that time?

Answer. I never hurt the machine more than once. Once a
curve covered up the machine and broke one of the bolts,
417 and I took the bolt out and went uptown and got another
one and put it in. That was the only fixing done on it during that time that I worked it.

By Mr. WHEATON:

Question 51. Which machine was that on?

Answer. On the Clipper.

Question 52. On the Miami claim?

Answer. No; that was broke on the Hawkins claim, sir.

By Mr. BOONE:

Question 53. Were you subpœnaed to come down here and testify in this case?

Answer. I had a message Thursday night to come here.

Question 54. To whom did you express your preference for the Clipper machine prior to the present time?

Answer. At the time I was working it.

Question 55. From the time you first worked it?

418 Answer. I have always said to all the miners that the Clipper machine was the best machine that was ever made.

Question 56. Tell us one man that you told it to.

Answer. I told it to Mr. Willard here and told Mr. Brink.

Question 57. To whom else who has not testified in this case?

Answer. I have told Joseph Hoskin so hundreds of times.

Question 58. I mean outside of the parties and witnesses in this case; to what other parties have you told it?

Answer. To all the men that worked for me in the claim. They always wanted to work the Clipper; didn't want to have the Giant. If you want the men's names I can refer to fifty. Here is Mr. Taylor, that has just gone out, who worked for me three seasons, if not four. He never wanted to see a Giant put on, nor none of the boys who worked in the diggings, because we could not get round with it in places where we could with the Clipper.

419 Re-examination of Philip Nichols by Mr. Wheaton:

Question 1. How many joints have the Little Giant machines that you have been testifying about?

Answer. Well, there was the bottom, and where we would put on the discharge pipe, and the globe, another place where you would bolt on the top.

Question 2. How many moveable joints were there in the Little Giant machine?

Answer. What you call moving both ways, up and down; do you call two ways or one?

Question 3. By a moveable joint I mean wherever two pieces were put together so that they would move, either up and down or round.

Answer. There was two.

420 Question 4. How many joints were there in the Clipper and Dictator machines that you have spoken about?

Answer. I never seen any more than that in the Clipper, up and down and sideways. That is the only way it would work.

Question 5. Did the Clipper have two joints, like the Little Giant, or did it only have one joint?

Objection. (Objected to by the complainant- as leading.)

Answer. Only had one joint—what you may call a joint, water joint.

Question 6. Please look at this paper, marked "Exhibit Clipper," and state how nearly that represents the Clipper machine that you worked.

Answer. That looks as natural as the machine did I saw.

Testimony of Thomas Manly.

Examination-in-chief of THOMAS MANLY on behalf of respondent-:

421 By Mr. WHEATON:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Thomas Manley; my age, fifty-seven years; I am at present living at Marysville, and I am a miner.

Question 2. How many different hydraulic mining machines are you acquainted with, Mr. Manly?

Answer. Practically, sir, I am not acquainted with but one. I never worked with any but the Giant—different grades of it, of course.

Question 3. When, if at all, did you last see a single-jointed machine in any hydraulic mine in California.

Answer. I saw one this week, sir.

Question 4. Where was that?

Answer. In New York Flat, in Butte county—I think it is in Butte county.

Question 5. How far from Forbestown?

422 Answer. It can't be but a little way; I never was in Forbestown; I should judge about ten miles—maybe a little more or less.

Question 6. What kind of hydraulic machines was it that you saw there?

Answer. A single-jointed machine.

Question 7. Do you know the name of it?

Answer. They called it the Clipper.

Question 8. Please look at this drawing marked "Exhibit Clipper," and say how nearly that represents it.

Answer. I should say that was a very fair representation of the machine.

Question 9. What were they doing with the Clipper machine at that time?

Answer. They were not working it that day. They had just taken their pipes apart and was moving it down to another place.

423 Question 10. Were they working any machine there at the time?

Answer. No, sir; not that day.

Question 11. Could you tell whether that machine had been in use recently or not?

Answer. Oh, yes.

Question 12. What were the indications to show that it had been in recent use?

Answer. Fresh grease on the ball outside. The grease on the deflector was also quite fresh, showing that it had been used within a short time.

Question 13. Was it rusty, as a machine would be that was out of use.

Answer. No, sir; quite bright.

Cross-examination of THOMAS MANLEY by Mr. BOONE:

424 Question 1. Did you ever see that machine work, Mr. Manly?

Answer. No, sir.

Question 2. So you don't know from your own knowledge whether it ever worked at all or not, do you?

Answer. Of my own knowledge, no, sir.

Question 3. Was it connected with the pipe when you saw it?

Answer. No, sir; disconnected.

Question 4. How came you to go three to see it, Mr. Manly?

Answer. Well, that is a very simple matter to tell you. I am engaged to go to Idaho this coming spring, and I worked on the Giants so much and found fault with them; not with the mechanism of the Giant particularly, but with the center bolt; I found great difficulty sometimes because it would catch things coming down through the pipe, and I had to take the joint apart, and I had heard of this Clipper——

425 Question 5 (interrupting). Who told you about it?

Answer. I have heard it talked about for two or three years back.

Question 6. Who told you it was there?

Answer. A Mr. McChesney told me it was there; I told him about the Giants, and he told me that there was a machine working there called the Clipper.

Question 7. Did you have any talk with Mr. Hoskin about it?

Answer. No, sir.

Question 8. Didn't say a word to him?

Answer. No, sir; not to my recollection. Mr. McChesney said that the parties who owned this machine was very well satisfied with it, and he thought of getting one himself if he could have one, and I was anxious to see it myself, and went up to see it.

Question 9. How long have you known Mr. Hoskin?

426 Answer. About twenty-three years.

Question 10. Have you frequently talked with him about hydraulic mining machines?

Answer. Somewhat.

Question 11. In your conversations with him has he always told you that the Little Giant was the best hydraulic mining machine?

Answer. No, sir.

Question 12. What did he say was the best hydraulic machine?

Answer. He left me to form my own conclusion?

Question 13. Do you know what machines he has been manufacturing for the last ten years?

Answer. No, sir.

Question 14. Never been at his foundry, have you?

427 Answer. Yes, sir.

Question 15. Don't you know what machines he has been manufacturing for the last ten years?

Answer. No, sir; I have seen the Little Giant there and other machines there.

Question 16. What other machines?

Answer. One with a packing on it.

Question 17. That is lately?

Answer. Yes, sir.

Question 18. That is since the decision in this suit?

Answer. I don't know about that.

Question 19. That has been within the last few months?

Answer. Yes, sir.

428 Question 20. Prior to that, you know that he has been making the Little Giant there?

Answer. I believe he has.

Question 21. You know that he has not been making anything else, don't you?

Answer. I don't know anything about that.

Question 22. You have talked with him?

Answer. I have talked with him occasionally, but not to ask him anything about his business.

Question 23. Didn't he tell you what machines he was making and what he was doing in his business?

Answer. He may have done so, but I have no recollection of any conversation of that kind transpiring between us,

Question 24. You say you are thinking of going up into Idaho?

429 Answer. Yes; not thinking of it, I am already engaged there.

Question 25. What are you going to do there?

Answer. Hydraulic mining.

Question 26. For whom?

Answer. For a company in Boston.

Question 27. Did you think of taking a machine up with you?

Answer. Yes, sir.

Question 28. Did you talk with Mr. Hoskin about it?

Answer. No, sir; Mr. McChesney told me about that machine.

Question 29. How did Mr. Hoskin know that you had been up there and seen that machine at New York Flat?

Answer. I told Mr. Joseph Hoskin here so in Marysville.

430 Question 30. How came you to tell him so? What business had you with him which led — to tell him that you had been to New York Flat?

Answer. I told him that I had been to New York Flat to look at that old machine, the Clipper.

Question 31. And before that you or he had never said a word about the Clipper machine?

Answer. I didn't say that. In general conversation he may have said so, but I don't know that any man ever mentioned that machine to me until Mr. McChesney mentioned it to me, one of the parties up there.

Question 32. And then when you came back to Marysville you happened to run across Mr. Hoskin and told him that you had been up there to see that machine at New York Flat?

Answer. I did, sir.

Question 33. What is Mr. McChesney's business?

431 Answer. Miner.

Question 34. Does he live in Marysville?

Answer. No, sir.

Question 35. Where does he live?

Answer. In New York Flat.

Question 36. Where was he when he told you about this Clipper machine?

Answer. At the hotel in Marysville.

Question 37. Can you tell fresh grease from grease that is not fresh?

Answer. Sometimes around these machines I can.

Question 38. You tell, then, by the taste?

Answer. By the smell, very often.

Question 39. How did you tell the freshness of the grease on this Clipper machine, by the taste or smell?

432 Answer. I looked at it.

Question 40. How can you tell by sight whether grease is fresh or not?

Answer. I don't know that I can answer that point. To the best of my knowledge, that grease was fresh. The machine was nice and bright. I couldn't tell it. I think it looked that way.

Question 41. You don't know what made it nice and bright, do you?

Answer. No; I presume constant use.

Question 42. You don't know when that machine was made, do you?

Answer. No; only by hearsay. The parties there told me.

Question 43 (interrupting). Never mind that.

By Mr. Wheaton:

Question 44. What did the parties tell you as to how long they had used that machine?

433 Objection. (Objected to by complainant- as incompetent — hearsay.)

Answer. I asked the gentleman, one of the owners of the claim—I think his name was Cornwall—how he liked that machine, and he said that he would not swap it for any other machine that he knew of, Giant or other; and his partner, Mr. Foss, also stated the same; a man that was working in the mine there, Mr. Meller, the same also; and, furthermore, if you wish me to state what other parties on another claim did, I will tell you.

Question 15. All right; state.

Answer. This Mr. —— told me that the Union Company, on the other side of the flat, was using a Giant, and that if I liked he would go over and introduce me and ask their opinion about the Giant and what they said about it. I went over and commenced conversation about it. I asked them how they liked the Giant, and I believe their words was that the Giant would do very well—something to that effect; but a- the time they bought this Giant they wanted to get a Clipper and could not get one, and they were compelled to take a Giant in its place.

434 By the MASTER:

Question 16. Do you know what the pressure of the water was at that mine that you have referred to on which the Clipper machine was used?

Answer. I don't know it personally; I know what they told me—about one hundred and forty feet.

Question 17. Do you know what the size of that Clipper machine was?

Answer. Nine-inch inlet, to the best of my knowledge. I didn't measure it; had nothing to measure it with.

Question 18. You have had sufficient experience with hydraulic mining machines to judge as to that, have you?

Answer. Yes, sir; I think so.

By Mr. WHEATON:

Question 19. Did these parties tell you how long that Clipper machine had been in use?

Answer. Yes, sir.

435 Question 20. How long did they say?

Objection. (Objected to by complainant- as hearsay.)

Answer. Nine years; and they also stated that it was a better machine to-day than any Giant that was made in Marysville; they liked it better.

By Mr. BOONE:

Question 21. There are some people who like the old Hose better than any hydraulic machines, are there not?

Answer. If they are like me they like it a long way off.

436 *Testimony of Jos. H. Hoskin.*

Examination-in-chief of JOSEPH H. HOSKIN on behalf of respondent- by Mr. WHEATON:

Question 1. Please state your name, age, place of residence, and occupation.

Answer. My name is Joseph H. Hoskin; my age, 48 years; my place of residence, Marysville, and I am engaged in the foundry business.

Question 2. For how many years, if at all, have you been engaged in the hydraulic mining business?

Answer. I have been interested in hydraulic mines from 1861 to 1862 to the present time.

Question 3. How ma-y different kinds of hydraulic mining machines have you personally used?

Answer. I have had hold of three.

Question 4. What were they?

Answer. Giant, Dictator, and Clipper.

437 Question 5. What other machines, if any, have you ever seen used?

Answer. I have seen the Allenwood used for a short time.

Question 6. Did you ever see a Fisher machine?

Answer. I have seen the machine. I never saw one in use.

Question 7. Where was the Fisher machine which you saw?

Answer. I saw two in Marysville—one in Tuolumne county.

Question 8. What became of the two that you saw in Marysville?

Answer. I put them in the cupola and melted them up.

Question 9. Whose were they?

Answer. Belonged to R. Hoskin, I believe.

438 Question 10. Do you know how they came to be his?

Answer. I do not; they were there before I came to Marysville.

Question 11. When they were melted in the cupola were they recast into something else?

Answer. I believe so.

Question 12. Do you know whether these Fisher machines were new machines or old machines?

Answer. From appearances I should say that they were new—that is, they were rusty, of course, but had not been used.

Question 13. Had they any appearance of having been worn any, any parts of them?

Answer. No, sir.

Objection. Mr. Boone: I object to all this testimony as irrelevant and immaterial.

Mr. Wheaton:

Question 1*0*. Where have you used the Clipper machine?

439 Answer. In the Hawkins claim and in the Miami.

Question 15. Who owned those claims at the time that machine was used in them?

Answer. Myself and my brother, Richard Hoskin, defendant.

Question 16. How long was that Clipper machine used in those two claims?

Answer. Either three or four seasons both together.

Question 17. Was there a Clipper machine in each one of those claims at the same time, or was it one Clipper machine which was used in both claims?

Answer. The same machine was used in both claims; the only one around there.

Question 18. What other machine did you use there with that Clipper machine, if any?

Answer. Number 3 Giant.

440 Question 19. How did the size of that number 3 Giant compare with the size of that Clipper machine?

Answer. The number 3 Giant was about a size larger; may have had a 11-inch inlet and the other 9.

Question 20. What size inlet has the number 2 Giant?

Answer. Nine inches.

Question 21. Then the number 2 Giant was of the same size as the Clipper machine used there?

Answer. Yes, sir; that is what I should call it.

Question 22. How long, if at all, have you been interested with your brother in the manufacture and sale of hydraulic mining machines?

Answer. I have been a partner in the foundry since after my
brother returned from Chili; that was in February, 1880, I
441 think, he got back, and I think it was in May that we published notice of our partnership.

Question 23. Were you attending to the manufacture and sale of the Little Giant machines any before that time?

Answer. Yes, sir; I was representing my brother, under power of attorney.

Question 24. For how long before that time?

Answer. I went there in May, 1879; I think it was April or May.

Question 25. Of what size Little Giants has there been the most sales made?

Answer. Number 1 and number 2.

Question 26. What is the size of the inlet of the number 1 machine?

Answer. Seven inches.

Question 27. How does the working of the Clipper machine compare with the working of the Little Giant machine of the same size?

442 Answer. I consider the Clipper the easiest-working machine.

Question 28. Why do you consider the Clipper the easiest-working machine?

Answer. Because it does work easier.

Question 29. Which throws the best stream?

Answer. I do not know that there is any difference in that; that depends a great deal how the rifles are put in; if the rifles are not properly put in they will spoil the best machine that ever was made.

Question 30. State whether or not there is a bolt in the lower joint of the Little Giant machine which cut the stream in two.

Answer. Yes, sir.

Question 31. Is there any such bolt in the Clipper machine?

Answer. No, sir; a clear cut water-way.

443 Question 32. For how many years have you known any one single-jointed machine to be use-?

Answer. I believe I saw the first Dictator that my brother had made. I think that must have been in 1870 or 1871; I am not sure.

Question 33. (Last question repeated.)

Answer. I cannot trace them up. The first Dictator that I saw used was in 1871 or 1872, and I have seen one in use within four days.

Mr. Boone :

Question 34. Not the same machine, though?

Answer. I cannot state that.

Mr. Wheaton :

Question 35. Have you ever seen a Dictator machine worn out by use?

Answer. No, sir; not worn out.

Question 36. Where did you see a Dictator machine within the last four days at work?

444 Answer. In what is known as the Druid claim, in Gold Run.

Question 37. How many Dictator machines do you know of at work up to the present time or within a month of the present time?

Answer. There is only one claim running in Gold Run, and that is only running one machine—one Giant and one Dictator.

Question 38. State whether or not you saw both the Giant and Dictator at work in that claim at the same time.

Answer. The pipe was not full of water when I was there; it was filling. They had been working all night and shut the water off, and I had not time to stop to see the pipe filled, because I had to come back to Marysville and the train was due there.

Question 39. Then you did not see that at work?

Answer. I saw the water running out of both machines, but they were not throwing any stream. They were connected with
445 the pipe and the water was running through each machine.

Question 40. So far as your experience goes, which works the better, the Dictator or the Giant machine, where both have the same capacity?

Answer. I should prefer the Dictator.

Question 41. Please state why.

Answer. Because it has no center bolt, and I think it is the easier working machine.

Question 42. What is the objection, if any, to that center bolt?

Answer. Sometimes trash will get through the pipe and catch on the center bolt.

Question 43. What do you mean by trash?

Answer. Bunches of pine needles, branches of half rotten trees, or something of that kind.

Question 44. What is the effect of that if they get into the pipe?

446 Answer. If there is much of an accumulation it spoils the stream and has to be taken out.

Question 45. How many Dictators have you seen in use alltogether?

Answer. I think I have seen eight—about that.

Question 46. State whether or not you have ever seen a time since 1872 when the Dictator machines were not at work during the water season at some of the claims near Gold Run.

Answer. I do not think there was a time up to the time of my leaving Gold Run but what there was some of the Dictators at work.

Question 47. When did you leave Gold Run?

Answer. I left Gold Run in the spring of 1879.

Question 48. Which of the two machines worked the best in the Hawkins and the Miami claims—the Clipper or the Little Giant?

447 Answer. The Clipper.

Question 49. Which was used most in those two claims?

Answer. The Clipper.

Question 50. How many Giants were there at those claims?

Answer. We had two Giants; only one Clipper.

Question 51. Why didn't you use the other Giant?

Answer. Because my men there preferred the Clipper, and they would not put the new Giant on. We had a new number 3 there.

Question 52. For how long a time did that new number 3 Little Giant machine lie idle while the Clipper was at work?

Answer. Until we worked out the Miami claim. I believe that
was two seasons and, I think we made one run on the third
448 season.

Question 53. What do you mean by one run?

Answer. Between clean-ups; it varied; if we ran day and night we ran from 30 to 40 days—that is, counting twenty-fours — to a day.

Question 54. What became of that Clipper machine that you used at the Hawkins and the Miami claims?

Answer. I sold it to a man from Iowa (?) Hill.

Question 55. Do you know the price he paid for it?

Answer. I think I got fifty-three dollars for it. I got a blowing up for selling it, too.

Question 56. Who did the blowing up?

Answer. My brother. He thought I sold it to- cheap. I was mistaken. I was not engaged in selling the machines; did not know how much the machines cost.

449 Cross-examination of Joseph H. Hoskin:

Question 1. How much did he want you to get for it?

Answer. He told me that he had paid fifty or seventy-five dollars royalty to Joe Craig for that machine, and *he* thought so myself.

Question 2. He did not consider that the use that he had had of it had paid for the royalty, did he?

Answer. The machine was as good as new.

Question 3. You say that you are interested in the Hawkins and Miami mines yet, Mr. Hoskin?

Answer. Yes, sir.

Question 4. In what other hydraulic mines are you interested?

450 Answer. That is all.

Question 5. Are you working those mines now?

Answer. No, sir; one is worked out as a hydraulic mine and the other one I cannot get water to easily, and then it joins onto the Gold Run Ditch and Mining Company and there is an injunction against them, and I do not — what to run it. I believe there are two injunctions in force in that district in the debris cases.

Question 6. You say you think the Clipper and Dictator are better machines than the Giant?

Answer. I think so.

Question 7. You are interested in the manufacture of the Giant, are you not?

Answer. I am now.

Question 8. Have *you* been upwards of two years, have you not?

451 Answer. Yes, sir.

Question 9. Did you manufacture any Dictators or Clippers?

Answer. No; we did not.

Question 10. You continue to manufacture the Little Giant?

Answer. We continued to manufacture the Little Giant—that is, the new form of it. We call it the same name, but we do not make the Little Giant with the ball.

Question 11. You continued to make the Little Giant until this suit was decided?

Answer. Yes, sir.

Question 12. And then you continued to make it, but made a little alteration, but still called it the Little Giant machine?

Answer. Yes, sir.

Question 13. The Dictator machine was patented, was it not?

Answer. It was not patented as the Dictator. It was patented as a pipe coupling, I believe.

Question 14. There was no patent on the machine, then?

452 Answer. Yes; I suppose that patent covered that machine.

Question 15. You and your brother owned that machine, did you not?

Answer. No, sir; we own it now; I never had no interest in it until now.

Question 16. Who owned it?

Answer. Joe Craig owned it; I had nothing to do with the Little Giants until I became a partner in the Marysville foundry.

Question 17. Your brother had a right to manufacture the Dictator, had he not?

Answer. Yes, sir; under a contract with the Craigs.

Question 18. Have any of these Clippers or Dictators machines been manufactured and put on the market within the last ten years, to your knowledge?

Answer. I can only answer from the time I have been in Marysville.

Question 19. Well, during the time you have been in Marys-
453 ville, have they?

Answer. No, sir.

Question 20. No hydraulic mining machines have been manufactured and placed on the market except Little Giant machines, have there?

Answer. That is all; the so-called Little Giant.

Question 21. Did you ever suggest to your brother that it would be better to make the Clipper machines and stop making the Little Giants?

Answer. No, not to stop making the Little Giants; but, after testing this machine in our claim, I wanted him to manufacture the Clipper, and asked him why he did not want to do it.

Question 22. What did he say?

Answer. He told me he would do it as soon as he got through with the Craigs.

Question 23. How did the Craigs keep him from manufacturing it?

Answer. They did not keep him from manufacturing it,
454 but they would get the benefit of his ingenuity in getting
it up.

Question 24. They got the benefit of the Little Giant machine didn't they?

Answer. Yes, sir; then he said there was another reason—it would cost considerable to get up another set of patterns for each machine. and the Giant was giving satisfaction, and I believe he said he did not think that Joe Craig would consent to incur the expense of new patterns—something of that kind.

Question 25. How many of those Clipper machines were built?

Answer. I cannot tell.

Question 26. How many did you ever see?

Answer. I think I have seen two and I have heard of two others.

Question 27. By whom were they built?

Answer. I suppose they were built by Williamson & Cory; they were the parties who owned the Empire foundry?

Question 28. At whose orders were they built?

455 Answer. I suppose my brother ordered them; that is my
supposition.

Question 29. You have been selling the Little Giant machines for a number of years, have you not?

Answer. No, sir; I never sold one until I went into Marysville.

Question 30. When was that?

Answer. I went there as my brother's agent in 1879.

Question 31. Then, after 1879, how long were you agent for your brother in Marysville?

Answer. From 1879 until I became a partner in the foundry.

Question 32. That was about a year, was it?

Answer. Yes, sir.

Question 33. During that time did you visit the hydraulic mines on the coast?

Answer. No, sir; only Gold Run. I had business up
456 there—collecting accounts—and had a job of piping up
there in the fall of 1880.

Question 34. What kind of machines were used there?

Answer. They used the Giant, Dictator, and my Clipper; that is all; that is the only three kinds that I ever saw there; I have seen two others just simply tested.

Question 35. Can you tell what proportion of Little Giant machines are used as compared with the Dictator and Clipper; what proportion of Little Giants in comparison with single-jointed machines?

Answer. There is a very much larger proportion of Giants used, because the other machines have not been on the market; you could not get them.

Question 36. Have you had any calls for one-jointed machines?

Answer. I have.

Question 37. When?

Answer. I think it was last summer.

Question 38. What time last summer?

Answer. The latter part of the summer, I think it was.

457 Question 39. Since the decision in this case?

Answer. Not the summer of this year, the summer of last year; the summer of 1881.

Question 40. How many calls did you have for those machines?

Answer. I had but one; not many miners have seen those Clippers. That man was a Portuguese, and from the way he described it—he could not speak English very perfectly—I judged that he wanted the Clipper.

Question 41. You said that the Clipper machines worked easier and threw a better stream that the Little Giant?

Answer. No, sir; I did not say it threw a better stream; it threw equally as good a stream as my Giant did.

Question 42. And worked easier?

Answer. Yes; much more easy.

Question 43. It was a cheaper machine to build, was it?

Answer. I was fully as cheap, I infer.

458 Question 44. Is it not a much cheaper machine to build than the Little Giant?

Answer. No; I suppose it might be built as cheap as the Little Giant, but I suppose it would not be any cheaper.

Question 45. Don't you know that a Dictator or a Clipper would be a cheaper machine to build?

Answer. I don't know that it is. Why should it be?

Question 46. Which is the heavier machine of the same size—the Clipper or the Giant?

Answer. I think my Clipper there would weigh a little more than a number 2 Giant.

Question 47. Does it require as much fitting and machine work to put together a single-jointed machine as it does a two-jointed machine?

Answer. No, sir; not quite; but then there are other offsets to
that. In a single-jointed machine we have no center bolt.
459 That has got to be put in a Little Giant and the head turned
true, and often the iron is not round and we have to cut off
the bolt.

Question 48. You think there would be no difference in the expense of manufacturing a Clipper machine and the Little Giant machine?

Answer. I could not say, not having experience. I think there would be very little, if any, difference.

Question 49. Did I understand you in your direct examination to say that you had not seen the time since 1872 that Dictators were not in use?

Answer. I said, I think, there has been one or more in use continuously from that time up to my time of leaving Gold Run.

Question 50. Did you see them in use all that time?

Answer. When I was visiting my own claims at Indiana
460 Hill, some two or three times a week I had occasion to visit
the North Star, and I had to go back of the machine sometimes and sometimes back of the discharge pipe, because we had a new trial most every day.

Question —. How often did you visit those mines?

Answer. I visited my Miami claim, when I was running it, not less than twice a week, and on clean-up day I went then.

Question 52. Then that statement was based upon your experience with the machine in the Miami and Hawkins mines?

Answer. I had nothing to do with the Dictator down there.

Question 53. Then the Dictator was being used at the North Star?

Answer. Yes; they used a Dictator and a Giant there.

Question 54. That is the one you referred to as having been continuously in use?

461 Answer. No, sir; there were others use- there.

Question 55. Where do you know of any others being used?

Answer. At the Church and Golden Gate consolidated claims.

Question 56. How often did you see them at work there?

Answer. I could not tell. When I was not very busy I used to take a cruise among the mines, and used to go and repair the pipe there to save them the expense of taking it down to the shop. I have repaired the discharge pipes when they were broken by a cave.

Question 57. Where else were they at work?

Answer. There were two at the Kearsearge. Mr. Williard was foreman of that claim. Then I have seen two others—one at work in Beale and Company's claim that Mr. Brink was interested in, and
one in the Indiana claim—Judd & Co., but this one that I saw
462 there in the North Star might have been one of those ma-
chines—probably was—but which one I cannot tell.

Question 58. All of those machines were purchased before the Little Giant was placed on the market, were they not?

Answer. That I cannot say. I can only say I think it is probable they were purchased before the Little Giant in its present form was put on the market.

By the MASTER:

Question 59. Do you know any reason why a practicable working Dictator Clipper machine of the same capacity as that of the Little Giant machines now in use could not be made and put upon the market and used with success?

Answer. There is no reason at all, sir, in my opinion.

By Mr. BOONE:

Question 60. Do you know whether they ever have been made of the same capacity of the large Little Giant machines?

Answer. No, sir; there is only one of each made that I am aware of equivalent to a number 2 Little Giant; but I tried a 463 stream of water with my Clipper. It was not large enough to throw the body of water that we used. I struck a big body of pipe clay and required more water. I think when I first purchased it there was a four or five inch nozzle butt on the discharge pipe and I shortened the discharge pipe back so that I could get a six-inch butt on it, and I have run that machine with a five and three-quarters nozzle on it. It threw a pretty fair stream. It was too large a discharge for the size of the water-way there.

Question 61. No larger Dictator or Clipper was ever made that the equivalent of a number 2 Giant?

Answer. I cannot say they were never made; I never saw one.

Question 62. Then it would be an experiment with you, and was it not, to make a larger Dictator or Clipper machine to know whether it would work or not?

Answer. I should not consider it an experiment at all, Mr. Boone, more than enlarging the size of the first Giant that was 464 made.

Question 63. You have no further experience than what you have gained from the use of those single-jointed machines of the size equivalent to a number 2 Giant?

Answer. That is all.

Question 64. That is what you judge from?

Answer. Yes; when they found that the Giant was a success, and wanted to make larger machines, they used that first number 1 machine, merely enlarging them.

Question 65. Still, is it not possible that the Clipper or the Dictator made upon as large a scale as the large Giant would be a failure?

Answer. That is possible but not probable?

Question 66. Then it would be an experiment, would it not?

Answer. Yes; it would be an experiment.

Respondent rests.

465 Continued by consent until Saturday, 16th inst., at 2 o'clock, p. m.

SATURDAY, *December* 16, 1882.

Present: Mr. Boone, solicitor for complainants; Mr. Wheaton, solicitor for respondent-.

Testimony of John McAllis.

Examination-in-chief of JOHN MCALLIS on behalf of complainants by Mr. BOONE:

Question 1. What is your name?

Answer. John McAllis.

Question 2. Where do you reside?

Answer. In Oakland.

Question 3. What is your business?

466 Answer. Mining.

Question 4. How long have you been a miner?

Answer. Since 1849.

Question 5. What class of mining?

Answer. Gravel mining—hydraulic mining—ever since the first start of it.

Question 6. What kind of hydraulic mining machines have you used?

Answer. I have used most all kinds. When you come to speak of the hydraulic machines, I have used Fisher's, Watson's, and the Little Giant—the Goose Neck before I did any of those.

Question 7. The Watson machine is a single-jointed machine, is it?

Answer. Single-jointed—yes.

Question 8. Where did you use the Watson machine?

Answer. At Smartsville?

467 Question 9. What mine?

Answer. I used them on two or three mines. We used them on what they called the Rose Bar mine and the Excelsior Company mine, Smartsville.

Question 10. Where did you use the Fisher machine?

Answer. The same place.

Question 11. And the Little Giant?

Answer. Yes; also used the Little Giant in Nevada county.

Question 12. Now, Mr. McAllis, please state, from your experience and knowledge, which of those machines was the superior machine.

Answer. Little Giant.

Question 13. How do the Little Giant and the Fisher machine compare?

Answer. Very well.

Question 14. You found they were about the same?

(Objected to and withdrawn.)

468 Question 15. How about the single-jointed machine; how did it compare with the Fisher machine and the little Giant?

Answer. Well, I did not like it as well. It threw a very good stream, but it was harder to work. That was the only objection I had to it. You couldn't elevate it quite enough.

Question 16. What size of machine was the Watson machine?

Answer. I think it was the largest he made at that time. I used a six-inch nozzle on it—from four to six inch, mostly.

Question 17. What was the size of the Little Giant that you used?

Answer. I have used the smaller size and the largest size made.

Question 18. Do you know what machine is generally used in hydraulic mines on this coast?

Answer. At the present time, so far as I know, the Little Giant is used most.

469 Question 19. Do you know what machines were in use before the Little Giant went into the market?

Answer. The Fisher and the Watson, both, where I was. I didn't travel round a great deal at that time. Since that time I have, but at that time I was located at Smartsville.

Question 20. Do you recollect what machines were used in the mines before the Fisher machines?

Answer. Goose Necks.

Question 21. When were the single-jointed machines used?

Answer. The only single-jointed machine that I have ever seen used was the Watson. I have heard of others.

Question 22. That was a patented machine, was it?

Answer. Yes, sir; I paid a royalty twice on it.

Question 23. It was patented by Thomas Watson, of Nevada, was it?

Answer. I got it at Nevada City. Watson and Allan went in together, I believe, to make the machines.

470 Question 24. Do you understand the construction of the Fisher machine?

Answer. Yes, sir.

Question 25. What element in the Fisher machine was it that made it superior to the single-jointed machine?

Answer. Well, it is easier handled. It has two joints, and you could turn it round or you could raise it up. It was an easier machine to work.

Question 26. The Allenwood had two joints, had it not?

Answer. No; only one; it had a rubber, an eighteen-inch piece of rubber.

Question 27. What did the Fisher machine contain in place of the piece of rubber of the Allenwood?

Answer. I should call it a knuckle joint raised up and down in a half circle.

Question 28. Do you consider that that joint had anything
471 to do with the success of *of* the Fisher machine?

Answer. O, yes; it made it more convenient in the mine.

Question 29. Do you know whether or not the Little Giant contained a joint similar to that?

Answer. The Little Giant had a ball and a socket.

Question 30. Was it similar to the Fisher in operation.

Answer. Yes, sir.

Cross-examination of JOHN McALLIS by Mr. WHEATON:

Question 1. Which machine did you use first—the Fisher machine or the Watson machine?

Answer. Fisher.

472 Question 2. Did you use the Watson machine in the same mine that you used the Fisher machine in?

Answer. Yes, sir.

Question 3. What did you do with the Fisher machine that you used there first?

Answer. I used it. For years it was used on different claims there after I used it there.

Question 4. How came you to get the Watson machine instead of another Fisher machine?

Answer. I forgot the reason I done that. I think it was because I could not get another Fisher machine on account of some difficulty, some litigation, or something or other, or else Mr. Fisher had left there; I don't know which.

Question 5. Was the Watson machine a good, practical machine?

Answer. Done very well; but it didn't suit me as well as
473 the Little Giant or the Fisher, for the reasons that I gave.

Question 6. Has not the Watson machine quite as much of an up-and-down motion as the Fisher machine?

Answer. No, sir.

Question 7. Do you know how much up-and-down motion either of those machines has if they are so set that you can get the full benefit of all the movement there is in the joint?

Answer. It is not so much in the other joint. I know the Fisher machine will elevate higher than the Watson machine would.

Question 8. Suppose that you had set the Watson machine so that it would have pointed further up and not quite so far down, would it not then have had as much elevation and depression as the Fisher machine?

Answer. No; you want to set those things level, you know, to
work them, because occasionally you want to use it *it* as
474 near as you can get to the machine on the ground to clear off
the bed rock.

Question 9. Could you not depress the Watson machine further than you could the Fisher machine when you depressed them both as far as the joint would permit?

Answer. I think not.

Question 10. Do you know how that was?

Answer. I know that was an objection I had to it at the time. It is so long since that I have used them that I cannot recollect about it particularly, but I know that it would not elevate as much as the Fisher, and when I used the Giant that suited me better than either of them.

Question 11. Has not the Little Giant more elevation than either of the others?

Answer. I think so.

475 Ques. 12. The Little Giant you could use without any lever, could you not?

Ans. The last one I used I had no deflector, and I know we could use it. The pipe was sixteen feet long.

Ques. 13. The Fisher machine had a lever?

Ans. Yes, sir.

Ques. 14. Could not that have been rigged on the Watson machine?

Ans. It could have been. I think they did sometimes put a lever on that machine, but it wouldn't work as well; it was harder to move; you had to take a great deal of pains with it to make it move; it was harder to move; it was harder on the men, a great deal. I liked the machine very well, but still I liked the others better.

Ques. 15. Did the Fisher machine get out of order when you used it?

Ans. Yes, sir; that was the only objection I had to the machine; it was a nice machine to work, but it would get out of order quicker than the others would—that is, it would wear on the front joint, the knuckle joint.

Ques. 16. What was the effect of the wearing on the knuckle joint?

Ans. It would leak when you moved it; still it was in
476 front of the lever, where it didn't make so much difference.

Ques. 17. Was there not a waste of water where it leaked?

Ans. No.

Ques. 18. What benefit would there be from that water that leaked out?

Ans. It was run into the flume.

Ques. 19. What water leaked through the machine you would get no benefit from in washing down the bank?

Ans. No; but you could get all the dirt you wanted to down to the flume; probably half of the time it would not be leaking at all.

Ques. 20. Miners pay a pretty high price for water, do they not?

Ans. In some places; there are some places it don't; it was ten cents an inch there where I was working.

Ques. 21. Did you ever use the Hoskin single-jointed Dictator machine?

Ans. No, sir.

Ques. 22. To whom did you pay royalty twice on the
477 Watson machine.

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I bought a Watson machine and a Fisher machine, and then paid Craig royalty on the machines afterwards.

Ques. 23. On the two machines?

Ans. Yes, sir. He wanted to charge me on the Goose Neck, and I made a final settlement with him for the whole lot.

Ques. 24. You did not pay that until after you had understood that Craig had recovered judgment in court against the two machines?

Ans. I don't know. He came down there several times to see me, and he was asking pretty high figures, and finally he came and offered to settle for the whole lot if I would pay him so much. I didn't want to bother with it, and thought it was better to pay him the royalty than to have any litigation about it.

Ques. 25. Was that after you had found out that you could not get another Fisher machine on account of the difficulties involved in the litigation, and so forth?

Ans. It must have been. It was some time after I had used all of them.

478 Re-examination of JOHN McALLIS by Mr. BOONE:

Ques. 1. Mr. Craig called several times, you say, to get the royalty?

Ans. Yes, sir.

Ques. 2. Bothered you considerably, did he not?

Ans. Yes, sir. I suppose he went down there four or five times to Smartsville, not for me, though, but for the others. I don't know how the others settled. I settled for myself only.

Ques. 3. You settled it rather than be bothered any more about it?

Ans. Yes, sir. I didn't know anything about his right to collect it. I supposed he had a patent; I didn't know. I didn't inquire into that at all.

Ques. 4. Do you know how long the Fisher machine had been in the market when you bought yours?

Ans. I think I used the first one he made.

Ques. 5. He had not yet put on the finishing touches so as to perfect the machine, had he?

479 Ans. No; he put on other improvements, I think, afterwards. I didn't see them.

By Mr. WHEATON:

Ques. 6. Was there any ball-and-socket joint in the Fisher machine that you had?

(Objected to by complainant- as irrelevant and immaterial.)

Ans. I don't know as you could call it—they called it a knuckle joint, I believe; a half circle set in a frame. You could not call it a ball and socket.

By Mr. BOONE:

Ques. 7. The upper joint of that Fisher machine had but one motion, had it?

Ans. Only one motion, up and down.

Ques. 8. Had pivots on each side which prevented it from moving sideways?

Ans. Yes, sir.

By Mr. WHEATON:

Ques. 9. Were there any pivots in that Fisher machine?

Ans. There wasn't pivots. I don't know what you might call it. There was a frame it set in.

480 By Mr. BOONE:

Ques. 10. Bearings?

Ans. Bearings inside. It moved up and down in a half circle.

Testimony of Henry Burns.

Examination-in-chief of HENRY BURNS on behalf of complainant- in rebuttal by Mr. BOONE:

Ques. 1. Where do you reside, Mr. Burns?

Ans. I reside in this city at present.

Ques. 2. What is your business?

Ans. Mining.

Ques. 3. Your age?

Ans. Fifty-one.

Ques. 4. How long have you been a miner?

Ans. Since 1855—the fall of 1855.

Ques. 5. In what class of mining have you principally been engaged?

481 Ans. I have been engaged in different kinds.

Ques. 6. What class of mining?

Ans. Well, placer mining.

Ques. 7. Where were your mines located?

Ans. Principally in Yuba county; also in San Bernardino county.

Ques. 8. What kind of hydraulic mining machines did you use in your mines?

Ans. I have used the Fisher and Watson and Little Giant.

Mr. WHEATON: We object to all this class of testimony on the ground that it is not in rebuttal, but is merely cumulative evidence, bearing upon the case attempted to be made by complainant in his opening testimony in this matter of accounting.

By Mr. BOONE:

Ques. 9. Do you understand the construction of the Fisher machine?

Ans. I think I do. It is a year or two since I have used them—two or three years.

482 Ques. 10. And do you understand the construction of the Little Giant?

Ans. Yes, sir.

Ques. 11. State how the Fisher machine compared with the Little Giant as a hydraulic mining machine.

Ans. The principle of action was about the same.

Ques. 12. When was it you used the Fisher machine?

Ans. It was six years ago.

Ques. 13. Do you know when that machine was purchased?

Ans. Purchased about that time.

Ques. 14. From whom did you purchase it?

Ans. Mr. Fisher. I can't remember the dates exactly. Perhaps Mr. Fisher could tell you more in regard to the date.

(Both parties admit that the Fisher machine referred to was sold to the witness in 1872 or 1873.)

Ques. 15. Did you have any trouble with the Fisher machine on account of its leaking, Mr. Burns?

Ans. Well, not for a long time.

483 Ques. 16. All those machines are liable to leak, are they not?

Ans. Yes, sir; as they wear they leak the same as others.

Ques. 17. How did the Fisher machine operate as a hydraulic mining machine, successfully?

(Objected to by respondent as leading.)

Ans. Successfully.

Ques. 18. How did the Fisher and Little Giant machines compare with the single-jointed machines which you used, Mr. Burns?

Ans. My preference would be for the double-jointed.

Ques. 19. How large a machine was the single-jointed machine which you used?

Ans. Thirteen inches inlet, if I remember.

Ques. 20. What size of nozzle would that carry?

Ans. I used a four and five inch nozzle.

Ques. 21. What was the size of the Fisher and Little Giant machines that you used?

484 Ans. I have used the Giants from number 2 up to number 5; the Fisher that I used was number 4 or 5; I don't know which.

Ques. 22. What was the size of the inlet and what was the size of the nozzle of the Fisher machine which you had?

Ans. On the Fisher I used six-inch, five-inch, and four-inch nozzles.

Ques. 23. What was the size of the outlet of the discharge pipe?

Ans. I think it was thirteen inches; I wouldn't be sure. We used a fifteen-inch pipe. How much it was tapered I could not say now.

Ques. 24. Did you use those machines all under the same head of water?

Ans. No, sir; we used the Fisher under one head and the Watson under a different head.

Ques. 25. What was the head under which the Watson was used?

Ans. Sixty to ninety feet.

Ques. 26. What was the head under which you used the Fisher machine?

Ans. One hundred and ninety.

485 Ques. 27. Did you ever use the Watson machine under the one hundred and ninety foot head?

Ans. No, sir.

Ques. 28. Why?

Ans. I hadn't any occasion.

Ques. 29. Could you have used it if you had attempted to use it under that head?

Ans. I would have tried to, of course, if I had had occasion.

Ques. 30. As a hydraulic miner, what is your opinion on that point, as to whether the Watson machine could be successfully used under this high head of pressure?

Ans. It could be used, but, at the same time, I should prefer the other. The friction in the Watson machine is too heavy for me to handle.

Ques. 31. What was the size of that Watson machine?

Ans. I could not say. It was quite large, however. It was number 4 or 5; must be, because it was heavier a great deal than the number 4 Giant.

486 Ques. 32. If the Fisher machine and the Watson machine had only been in the market, which machine would you have purchased?

Ans. I think I should prefer the Fisher.

Ques. 33. For all heads, should you?

Ans. For any purpose.

Ques. 34. Did you say that you thought you would prefer the Fisher machine, or that you would prefer it?

Ans. I would prefer it.

Ques 35. What element in the Fisher machine makes it preferable to the Watson machine—that is, I mean, what particular point in the machine?

Ans. It can be handled so much easier. One man can handle the Fisher machine.

Ques. 36. What feature in the machine makes it so much easier to handle?

Ans. It must be the friction—packing of the gravel in the packing of the machine.

Ques. 37. I refer to the construction of the machine. What feature in the construction of the machine is it that makes it supe-
487 rior to the Watson?

Ans. They have a greater leverage, in the first place, to handle it; they have this lever back of it.

Ques. 38. Is there anything in the construction or arrangement of the joints that makes it easier to handle than the Watson machine?

Ans. Apparently; yes; one packs the sand so that it is almost impossible for one man to move it.

Ques. 39. Which one is that?

Ans. The Watson.

Cross-examination of HENRY BURNS by Mr. WHEATON:

Ques. 1. Do you know whether the Watson machine that you used turned on wheels or whether those wheels had been taken off and flat lugs substituted in place of them on account of the suit against the manufacturers of that machine brought by the Craigs under the Quartus Rice patent?

Ans. The wheels were still on the machine.

488 Ques. 2. Which way did that machine turn hard? Was it the up-and-down motion or the horizontal motion?

Ans. The horizontal motion was the one that turned hard.

Ques. 3. How was the up-and-down motion to it?

Ans. It was not so hard.

Ques. 4. Were not both of those motions actually easier in the Watson machine than they were in the Fisher machine, if you took off Fisher's long lever and turned the machine by the nozzle as you did the Watson machine?

Ans. I am not sure, but I think not, because I have had three or four men on the Watson machine to help me move it after standing, say, half an hour, with a rope attached.

Ques. 5. Did you ever have more than one man on the Fisher machine?

Ans. Not that I remember.

Ques. 6. Do you know how they would compare with each other if the lever was taken off the Fisher machine?

Ans. I could not say; I never used them in that manner. On occasions I have used the Fisher machine when there was no
489 chance to work the lever, but not so as I could say how it would generally work.

Ques. 7. Then, as a matter of fact, you do not know which was the easier-moving joint, that of the Watson or that of the Fisher machine?

Ans. Nothing more than I can judge from what experience I had with them.

Ques. 8. Had not the semi-cylindrical joint in the Fisher machine a great deal more bearing surface than the joint in the Watson machine?

Ans. There was less friction in the Fisher machine, I think.

Ques. 9. Which had more bearing surface between the parts of the joints, the Fisher machine or the Watson machine?

Ans. The Watson must have had the largest.

Ques. 10. Did the Watson machine have any leather packing in it, or did it work up metal surfaces, one against the other?

Ans. Leather packing.

Ques. 11. Then where the leather packing was the metal surfaces did not come in contact in the Watson machine, did they?

490 Ans. Not unless it was worn out.

Ques. 12. Was the packing worn out in the Watson machine that you used?

Ans. The packing would wear out quite often.

Ques. 13. What did you do in that case?

Ans. Renewed it.

Ques. 14. Were there any surfaces of the Watson joint where metal wore against metal when the machine was in good order?

Ans. There was not.

Ques. 15. Then the friction came merely upon the leather packing and upon the wheels which rolled round on the inverted flange?

Ans. Yes, sir.

Ques. 16. In the Fisher machine there was a metal surface bearing against a metal surface in the upper joint, was there not, without any leather packing at all?

Ans. I am not sure. If I remember right, there was a rubber packing. I wouldn't be sure in regard to that. As I told you,
491 it has been some time since I handled that machine. However, it didn't leak much until it was worn.

Ques. 17. Was it not the case with that metallic joint—that of the Fisher machine—that the metal itself would wear away in the course of a few months so that the machine would leak?

Ans. It — to several months, because I used it several months—the one I wore out; I didn't wear it out, but I left it there and it was in use at that time; I used it two years and it was looking worn at that time, but not so but what they used it right along.

Ques. 18. In your opinion as a mechanic, would not the friction on the bearing surface of the Fisher machine, that was so-arranged that it would wear so as to make the machine leak, would not that friction make the joint move harder up and down than would the joint of the Watson machine which turned round upon the rollers under the inverted flange?

(Objected to by complainant- on the ground that the witness is not testifying as a mechanical expert, and no foundation has been laid for the evidence called for in the question.)

Ans. Not in my experience.

492 Continued by consent until Monday, 18th instant, at two o'clock p. m.

MONDAY, *December 18th*, 1882.

Present: Mr. Boone, solicitor for complainant-; Mr. Wheaton, solicitor for respondent-.

Testimony of John Timmons.

Examination-in-chief of JOHN TIMMONS on behalf of complainant- by Mr. BOONE:

Ques. 1. What is your name, age, and place of residence?

Ans. My name is John Timmons; my age is fifty-two; place of residence, San Francisco.

Ques. 2. What is your occupation?

Ans. I have no particular occupation.

Ques 3. How long have you resided in San Francisco?

Ans. Since 1872.

Ques. 4. What business were you engaged in before you came to San Francisco?

Ans. Mining.

493 Ques. 5. Where?

Ans. In Nevada county.

Ques. 6. What class of mining?

Ans. Hydraulic mining, principally.

Ques. 7. Do you know anything about the different hydraulic mining machines that have been used in this State?

Ans. Yes, sir.

Ques. 8. What machines are you familiar with?

Ans. Well, it was mostly hose that was used in the early days of mining.

Ques. 9. What succeeded the hose?

Ans. Then there was the Goose Neck.

Ques. 10. You are familiar with that machine?

Ans. Yes, sir.

Ques. 11. Then, what next?

494 Ans. The Dictator, I believe, next.

Ques. 12. The Dictator machine?

Ans. Yes, sir; used in the diggings I knew.

Ques. 13. How long did that remain in use?

Ans. It was in use when I left; not so very much; a part of the time.

Ques. 14. What machine next?

Ans. The Little Giant was next; that was used mostly.

Ques. 15. The Little Giant displaced the Dictator, did it?

(Objected to by respondent as leading.)

Ans. It was looked on as being the best; the Little Giant was best for a big head of water; the Dictator answered for a small head.

Ques. 16. Which of those machines have you actually used?

Ans. Used both.

Ques. 17. Both of which.

495 Ans. The Dictator and Giant—the Little Giant.

Ques. 18. How long did you use the Dictator?

Ans. About a year from the time I left there. It was not used all the time. When we used a big head of water we used the Little Giant.

Ques. 19. Now, from your experience, Mr. Timmons, what are the comparative values of those two machines—the Dictator & the Little Giant?

Ans. Well, the Dictator is the best—or the Little Giant is the best, I should say, because you can run a larger head of water through it; that is the advantage.

Ques. 20. You say you used them on the same mine, did you?

Ans. Yes, sir.

Ques. 21. Used them with the same head of water?

Ans. Yes, sir; the same head of water and the same pressure.

Ques. 22. Under the same pressure?

Ans. Under the same pressure.

496 Ques. 23. You say you found the Little Giant to be the best machine, did you?

Ans. The Little Giant was the best because you could run more water through it. The Dictator was small at the opening or inlet.

Ques. 24. Was that the only fault you found with the Dictator?

Ans. That was the principal fault.

Ques. 25. If that inlet had been made large enough would it have been as good as the Little Giant machine?

Ans. I don't know. It was harder to handle because it would turn up straight; you had to have a weight on it to keep it down.

Ques. 26. Now, if both those machines were in the market, the Little Giant and the Dictator, and you were in need of a hydraulic machine, which would you purchase?

Ans. I would purchase the Giant.

Ques. 27. No difference what the head of water was?

Ans. No difference what the head of water was. You could change your head, make it smaller, by using littler nozzles.

497 Ques. 28. In your judgment, would the Dictator machine have been a successful competitor with the Little Giant if it had been manufactured steadily after the Little Giant machine was placed upon the market?

(Objected to by the respondent for the reason that it is irrelevant and incompetent testimony, besides the witness is not shown to be in possession of any data on which he can form opinions of any weight or value.)

Ans. No.

Cross-examination of John Timmons by Mr. Wheaton:

Ques. 1. When you speak of the Little Giant being better because it would carry a bigger head of water do you mean that it would carry where the head of water was of greater depth or higher pressure or only a greater head in quantity?

Ans. Greater in quantity from the same head; it had a bigger inlet.

Ques. 2. And a bigger outlet?

Ans. Yes; you could make that as big as you wanted to with different-sized nozzles.

498 Ques. 3. You could not make the inlet or outlet of the Dictator as large as that of the Little Giant any way; you had not an inlet big enough.

Ans. You could not make the outlet bigger. The Little Giant used about a seven-inch pipe.

Ques. 4. Do you know anything about the advantages of a larger machine over a smaller one?

Ans. Well, yes; you can run a larger pipe. You can run a bigger head of water with more pressure. The larger the machine the bigger the head of water.

Ques. 5. Is not that all the difference between the working of the small machine and the large one, so far as your experience goes?

Ans. That is pretty much all the difference.

Ques. 6. If that Dictator machine had been of the same capacity as the Little Giant—that is, if it had as big an inlet and outlet as the Little Giant, it would have been just as good a machine, as far as you could judge?

Ans. It would not have worked the same on account of the Little

Giant keeping its place where you moved it. The Dictator
499 you had to weight down or it would turn up straight; you
had to have a weight tied to it to keep it down.

Ques. 7. Did it throw just as good a stream of water as the Little Giant, using the same pressure?

Ans. Well, not much difference.

Ques. 8. Did you have to balance the Little Giant also?

Ans. Oh, yes.

Ques. 9. Did you have to balance it?

Ans. It was not balanced the same as the Dictator, with a weight on the discharge pipe.

Ques. 10. It was balanced by a weight, wasn't it?

Ans. Yes, sir.

Ques. 11. That is, the Little Giant was balanced by a weight?

Ans. The Little Giant was handled with a lever.

Ques. 12. Wasn't it balanced with a weight?

Ans. Yes, sir.

Ques. 13. You never used the Fisher machine, did you?

500 Ans. No.

Ques. 14. You don't know what made the Fisher machine a failure—why it was not used?

Ans. No, sir.

Re-examination of John Timmons by Mr. Boone:

Ques. 1. You say you had to hang a weight on the end of the discharge pipe of the Dictator?

Ans. Yes, sir.

Ques. 2. That weight had to be sufficient, had it not, to counterbalance the pressure of the water?

Ans. Yes, sir; to keep it down.

Ques. 3. Did that weight interfere with the handling of the machine?

Ans. Oh, no; you could move it round.

Ques. 4. How would you raise and lower the machine, the discharge pipe, with that weight on it?

501 Ans. You would make the weight lighter if you wanted it raised.

Ques. 5. Did the weight remain there all the time?

Ans. The weight remained there.

Ques. 6. It had to be handled with the discharge pipe, hadn't it?

Ans. Yes, sir.

Ques. 7. Did you have any weight on the discharge pipe of the Little Giant machine?

Ans. No; that I am not sure about; I think not. I did not work much with that machine myself. I am not sure how the Little Giant worked; it was the Dictator I paid most attention to.

Ques. 8. Is that the only Dictator you ever used?

Ans. That is all.

Ques. 9. That one machine?

Ans. That one machine.

502 Ques. 10. Do you know of your own knowledge whether or not a Dictator made with a larger inlet to throw a larger stream and under a higher pressure could be successfully used?

Ans. I don't think it could, because the Little Giant was used in all the mines around where I was; only one Dictator that I know of.

Ques. 11. You have used the old hose, have you?

Ans. Oh, yes; I used the old hose in early times.

Ques. 12. That threw a very good stream under low pressure, didn't it?

Ans. Yes, sir; a better stream in proportion than the other, because it was straighter. The straighter it is the better stream it is. Then the Goose Necks came in.

Ques. 13. Is it desirable in hydraulic mining to use large streams under a heavy pressure?

Ans. Yes, sir; if the ground is hard it is.

Ques. 14. Most of the ground is hard in this country?

Ans. Mostly hard. Then you want to send the water all together, get it all through the pipe, so you can use it to better advantage.

503 Ques. 15. Now, what feature in either of these machines, the Allenwood or Goose Neck, or the Dictator or the Little Giant, is it which makes it superior to the hose?

Ans. Oh, the hose. You couldn't run more than about one hundred inches of water formerly through the hose; it is too hard to handle, and then it would burst, you know.

Ques. 16. The Allenwood was an improvement on the hose then, the Goose Neck?

Ans. Yes; you had but about five or six feet of canvas.

Ques. 17. Did that enable you to use larger streams under heavier pressure than you could with the hose?

Ans. Yes, sir; you could use a larger pressure. When using a heavier pressure you had a heavier stream.

Ques. 18. How was it with the Dictator machines?

Ans. That was an improvement on the Goose Neck.

Ques. 19. That was an improvement on the Goose Neck?

Ans. Yes, sir.

504 Ques. 20. Did that enable you to use larger streams of water under heavier pressure?

Ans. It was not so dangerous to handle. If the Goose Neck got loose it would kill you. You had to tie it with stakes in the ground.

Ques. 21. That was the feature of improvement of the Dictator over the Goose Neck?

Ans. Yes, sir. When moved down it would stand where you left it.

Ques. 22. Now, did the Little Giant machine increase the capacity of the water—that is, did it allow you to use larger streams under heavier pressure still?

Ans. Yes; you could use a larger stream under heavier pressure. A heavier machine.

Recross-examination of JOHN TIMMONS by Mr. WHEATON:

Ques. 1. What claim was that Dictator used in that you speak of?
Ans. It was used in my claim at Chalk Bluff.

Ques. 2. What claim?

505 Ans. The Timmons claim. Mr. Rockman was the only one that was using it.

Ques. 3. Was that the claim called the Duryea claim?
Ans. Yes, sir; Duryea got it afterwards.

Ques. 4. Do you know how long that Dictator continued to work on that claim?
Ans. I don't know.

Ques. 5. When did you first know it at work there?
Ans. In 1872.

Ques. 6. What time in 1872?
Ans. In the winter of 1872. I have been down here most of the time.

Ques. 7. What time in 1872 did you come down here?
Ans. I have been down here in the fall.

Ques. 8. It was in the forepart of the winter of 1872—that is, the winter of 1871 and '72 that you saw it?

506 Ans. Yes, sir; in 1872.

Ques. 9. How long since you have been in any business?
Ans. I have not been in any business here but dealing in mining stocks.

Ques. 10. You have been dealing in mining stocks?
Ans. Yes, sir.

Testimony of Geo. H. Rogers.

Examination-in-chief of GEORGE H. ROGERS on behalf of complainant by Mr. BOONE:

Ques. 1. What is your name and age?
Ans. My name is George H. Rogers. I am sixty-three.

Ques. 2. Do you live in San Francisco?
Ans. I do at present; yes, sir.

Ques. 3. What is your occupation?
Ans. My occupation—at present I am working in the mint.

507 Ques. 4. How long have you lived in San Francisco?
Ans. Since September last.

Ques. 5. Where did you reside before that?
Ans. My last year previous to that I was superintendent of the State prison at Folsom. I came here in September. Only one year I was there.

Ques. 6. Have you had any experience in mining in this State?
Ans. Prior to my going to the prison I never did anything else.

Ques. 7. What class of mining was you engaged in?
Ans. All kinds of mining. I first commenced here in 1852 in placer mining. I followed up all the different routine of mining as it progressed and improved, and so on.

Ques. 8. How long did you follow hydraulic mining?

Ans. Well, I had more or less to do with hydraulic mining ever since it was started. Hydraulic mining was first started in 1853.

508 Ques. 9. Have you had any experience with the hydraulic mining machines that are used on this coast?

Ans. Well, yes; I have seen the working of pretty nearly all of the inventions that have been gotten up.

Ques. 10. Used all of them, have you, nearly?

(Question objected to by respondent- as leading and withdrawn.)

Ques. 11. State what machines you have used.

Mr. WHEATON: Personally used, with your own hand.

Ans. I have used with my own hands all the machines, pretty much. I first used what was called the Goose Neck. That was in 1864 and 1865.

Ques. 12. Which one next? By the way, state whether you had used the hose prior to the Goose Neck.

Ans. Oh, yes; used the canvas hose. The Goose Neck was the first cast machine.

Ques. 13. Go ahead. State what next.

Ans. We used next what was called the Dictator.

509 Ques. 14. When was it you used that?

Ans. Used that in—I could not be positive about the year when we commenced using that.

Ques. 15. As near as you can.

Ans. It was along somewhere in 1867 and '68; I would not be positive about that.

Ques. 16. That was the next machine you used, was it?

Ans. It was the next machine I used. That you may the better understand, I was water agent nearly twenty years consecutively and was in all the claims in that vicinity; every time I would go in a claim I used to try the machine; sometimes by request, sometimes of my own accord.

Mr. BOONE: I suppose I may state to the witness that the Dictator was out about 1870 to 1872——

Mr. WHEATON: I object to your giving the witness any information and to your leading questions also.

Ques. 17. What machine did you use next to the Dictator?

Ans. What is called the Little Giant.

Ques. 18. How long did you use the Dictator?

510 Ans. Not a great while; a very short time; I could not say positively what length of time we used them; I know it was not long; the Little Giant superseded that.

Ques. 19. In your opinion, judging from your experience, what is the value of the Dictator as compared with the Little Giant machine?

(Objected to by respondent- on the ground that the comparison should be made between the Fisher machine and the Dictator machine on the ground that the Little Giant was covered by other patents besides the complainants', which other parties were paid a larger royalty, the only question in this case being what the invention of the plaintiff Fisher was worth, and he has no right to include in that an invention which was covered by other patents; for the further reason that the witness has not shown that he knows the value of either machine in a pecuniary sense.)

Ans. Well, the difference between the two machines, so far as my experience has gone, and I have had considerable, I would not consider the Dictator very valuable at all in comparison with the Little Giant.

Ques. 20. Did you ever use the Fisher machine?

Ans. No, sir.

511 Ques. 21. Did you know the Fisher machine?

Ans. I have seen it, but I never used it.

Ques. 22. You understand its construction and operation, do you?

Ans. I could not say that I do.

Ques. 23. If you were going to purchase a hydraulic mining machine and you should find the Dictator and the Little Giant in the market, which of those two machines would you purchase?

Ans. I would certainly purchase the Little Giant.

Ques. 24. For all purposes for hydraulic mining?

Ans. Yes, sir.

Cross-examination of GEORGE H. ROGERS by Mr. WHEATON:

Ques. 1. Did you ever own either the Goose Neck or a Little Giant or a Dictator machine?

Ans. I never owned any of those machines.

512 Ques. 2. What mines have you owned any interest in in which any of those machines were used?

Ans. I didn't own any interest in any mines where the machines were used.

Ques. 3. In what mine did you ever work for wages or as an employee in which any of those machines were used?

Ans. I worked in the mines belonging to Mr. Hayward here in the city ever since he purchased the property of the South Yuba Canal Co. I worked for them prior to that & for him since.

Ques. 4. Was you working for wages in those mines?

Ans. I was working under a salary as water agent.

Ques. 5. What was your position in those mines?

Ans. My business was whenever it was necessary for me to go to the mines to see what change was wanted in relation to water. It was of almost daily occurrence in one place or another.

Ques. 6. Did you do anything more in those mines than merely attend to the water?

513 Ans. Nothing more than when I would go down. Almost every time I would go into any of them I would take hold of the pipes, you know, for a few minutes to see the working of them.

Ques. 7. Did you ever work in either one of those mines as a miner?

Ans. Not under wages; I did not.

Ques. 8. Then your whole experience with the use of these hydraulic machines is confined to your going into the mines, merely taking hold of them and working them for a few minutes?

Ans. On my regular business course it was my habit to take hold of the pipes every time I would go in for a short time. I was not employed there for that business. I was looking after the water.

Ques. 9. Have you ever been in any employment in which it was your business to attend to a hydraulic mining machine since 1869?

Ans. No, sir.

Ques. 10. In what mine did you see the Dictator?

Ans. The Dictator, I think, as well as I remember—I could not be positive what mine I saw it in—in some of the Globe Run claims; I think along in the summer of 1865.

514 Ques. 11. Who owned it? Who owned the machine or the mine in which that Dictator was worked?

Ans. Well, a gentleman by the name of Jewell. Jewell and Jones, I think, were the owners of the claim, as far as I know; so I heard. Whether they owned it or not I don't know.

Ques. 12. Can you swear that those gentlemen ever had a Dictator in their claim at Gold Run?

Ans. What?

Ques. 13. Can you swear that the gentlemen you have named ever had a Dictator hydraulic mining machine in their claim at Gold Run?

Ans. I would not swear to it any further than that they told me. That is what they said the name of the machine was. That is all I know about it.

Ques. 14. Will you swear to that; that they told you the name of the machine they had there was the "Dictator?"

Ans. No; I would not.

Ques. 15. Now, do you actually know that you have seen a Dictator hydraulic mining machine in your life?

515 Ans. So far as this: I only know by what they called them. It might have been a Dictator or might not have been. I not having any interest in the machine, of course I could not tell.

Ques. 16. How long since have you seen a machine that was called a Dictator?

Ans. I have not seen one for quite a number of years.

Ques. 17. What do you mean when you say quite a number of years?

Ans. Five or six years. I might have seen some old ones lying around in the claims.

Ques. 18. How long since you have seen a Dictator mining machine in use?

Ans. I have not seen it in use for—I could not be positive about that. Quite awhile, though.

Ques. 19. Have you seen one in use since 1865?

Ans. I could not swear that I did.

Ques. 20. How long did you ever use one yourself?

516 Ans. Only a few minutes at a time.

Ques. 21. Are you sure you ever did use one a few minutes?

Ans. All I know about it is what they told me—that that was the name of it.

Ques. 22. How was that Dictator machine made?

Ans. I never noticed it particularly enough to describe it to you. I could not describe it.

Ques. 23. Was there one joint or two in it?

Ans. That I could not tell you. Not being interested in the machine and never purchasing one, I didn't pay much attention to them; only just the working of them.

Ques. 24. Then you know very little about the Dictator, don't you, if you can't tell whether it had one joint or two?

Ans. I don't profess to know but very little about it. It is a long while ago. Not being interested in it, I didn't pay much attention to it.

Ques. 25. What was the trouble with that Dictator machine you did see, if you remember it?

517 Ans. Well, all the prejudice I heard against it was that it was hard to manage.

Ques. 26. What trouble did you find with it as you used it?

Ans. I found no trouble; did not consider it first class. I know it was very hard to move it around.

Ques. 27. Wasn't it far the best machine that you had ever seen up to that time?

Ans. Well, it was the best up to that time, probably; there was not a great deal ahead of it.

Ques. 28. When did you last use any hydraulic machine in a mine?

Ans. I used it, I think it was, in July last a year ago; about the winding up of the Hayward claims, I think was the last.

Ques. 29. You say you are employed in the mint, are you?

Ans. Yes, sir.

Ques. 30. Is the complainant, Frank H. Fisher, in the mint also?

Ans. Yes, sir.

518 Ques. 31. Did he help you to get your position in the mint?

Ans. No, sir; not that I know of. If he did I am very thankful to him for it. I didn't know Mr. Fisher was there until a few days ago.

Re-examination of GEO. H. ROGERS by Mr. BOONE:

Ques. 1. What did you say your business was at the time this Dictator machine was used in the mine?

Ans. I was water agent at that time.

Ques. 2. What do you mean by water agent? What does that include? What were your duties?

Ans. It includes a certain distance of water ditch to attend to; to sell water to the mines wherever we could—wherever we had a chance.

Ques. 3. The water that went through those hydraulic machines?

Ans. Yes, sir; distributing it out to mines wherever we could find sale for it.

519 Ques. 4. How long did you continue in that business?

Ans. I commenced there in 1865.

Ques. 5. How long did you continue?

Ans. Up to the time I left there, the first of this month a year ago.

Ques. 6. Did your duties call you to the various mines along the ditch?

Ans. Yes, sir.

Ques. 7. You became familiar with the machines that were in use, did you?

Ans. Yes, sir; not a claim within five or six miles of where I lived that I have not been in—some of them a great many times; some of them three or four times a week.

Ques. 8. When you was there you saw the various machines they had in use?

Ans. Yes, sir.

Ques. 9. Did you ever see any other Dictator in use along there in those mines?

520 Ans. No; not in those years—not at any time that I recollect.

Ques. 10. How often did you handle that Dictator—take hold of it and run it for a time—more than once?

Ans. You mean the Dictator?

Ques 11. Yes.

Ans. Not a great many times; probably eight or ten, in all, different times.

Ques. 12. About how long would you run it each time?

Ans. Five or ten minutes—sometimes longer; just as I had time to spare.

Ques 13. Now, can you describe that machine—the construction of that Dictator?

Ans. I really could not; I could not draw it to save me.

Ques 14. What was the machine called by the parties in the mine that were using it?

Ans. Well, that is what they called it.

Ques. 15. What—the Dictator?

521 Ans. Yes, sir.

Ques. 16. You often worked the other machine in the mine—the Little Giant?

Ans. Yes, sir; oftener than the other.

Ques. 17. What difference did you find in the operation—the handling of the two machines?

Ans. Well, there is a vast deal of difference, because you could throw a stream with the Little Giant almost anywhere you were a mind to, where you wanted to; do it very easily, too; do it with one hand, whereas in the case of the Dictator it took two or three men, and sometimes they could not do it.

Ques. 18. How about the pressure under which those machines were operated?

Ans. Well, they were under a pretty heavy pressure. I never saw it surveyed and never surveyed it. On the Hayward claims there those claims were run under three hundred and sixty foot pressure.

Ques. 19. Was the Dictator operated under three hundred & sixty foot pressure?

Ans. Not that I know of.

522 Ques. 20. You don't know what pressure?

Ans. I don't know what the pressure was.

Ques. 21. Well, you say you found the Little Giant worked easy?

(Question objected to as leading and withdrawn.)

Ans. ——.

Ques. 22. How long have you known Mr. Fisher?

Ans. I have known him about thirty years.

Ques. 23. Intimately?

Ans. Well, we were intimately acquainted at one time. I have not seen him for fifteen or eighteen years before I met him in San Francisco.

Ques. 24. How long ago was that?

Ans. That was about ten days ago.

Recross-examination of GEORGE H. ROGERS by Mr. WHEATON:

523 Ques. 1. Did those Little Giants used on the Hayward mines have deflectors on them?

Ans. Reflectors?

Ques. 2. Deflectors.

Ans. I don't understand what you mean by that.

Ques. 3. Are you so little acquainted with hydraulic mining machines that you don't know what deflectors are?

Ans. They might call it by one name and you by another. I might know what you mean if I understand the proper name of it. Miners, you know, don't call things by the same name.

Ques. 4. Did the Little Giant machines which you used in the Hayward claims have some sort of device at the outlet end of the nozzle so that by turning that device the water would strike it and turn the machine?

Ans. No; I don't know anything about anything of that kind.

Ques. 5. You have not seen that in use?

Ans. If that was there they didn't put it in operation so that I noticed it. There might have been something of the kind there.

524 Ques. 6. Was this Hayward claim at Dutch Flat?

Ans. Yes, sir.

Ques. 7. When did you last use the Little Giant in that claim?

Ans. Well, I could not be positive about that.

Ques. 8. Have you actually used one of those Little Giant machines in the Hayward claim within six years last past with your own hand?

Ans. Well, I used machines there that they called the Little Giant.

Ques. 9. Have you used one of them within six years last past?

Ans. Yes, sir. What they called the Little Giant, I have.

Ques. 10. You say you don't know whether there were deflectors on them or not?

Ans. I do not.

Ques. 11. Who was foreman of the claim when you used them there?

525 Ans. John Harriman.

Testimony closed with this exception: If the court decides that the joint machines which Mr. Hoskin is now making are an infringement of the Fisher patent, then further testimony shall be taken so as to cover those additional machines made up to the time of making the last machine.

MONDAY, *January* 29, 1883.

Present: Mr. Boone, solicitor for complainant-; Mr. R. Hoskin, respondent.

Testimony of Richard Hoskin.

Testimony of RICHARD HOSKIN, recalled on behalf of complainant-:

The WITNESS: The number of machines of the style of "Exhibit New Style Joint" made by us since November 3rd, 1882, is seventeen number 1 machines, four number 2, two number 3, one number 4, one number 5. These machines were sold at the 526 same prices as the corresponding numbers of Little Giant machines, so called.

(Continued, subject to notice.)

Endorsed: Filed May 21, 1883. L. S. B. Sawyer, clerk, by J. F. O'Beirne, deputy clerk.

527 *Complainants' Exceptions to Master's Report.*

In the United States Circuit Court, District of California.

FRANK H. FISHER *et al. vs.* RICHARD HOSKIN *et al.*

Before the master.

Exceptions taken by the said complainant- to the report of S. C. Houghton, Esq., master in chancery of this honorable court, to whom this cause stands referred, bearing date the 21st day of May, A. D. 1883.

First exception. For that the said master in and by his said report certified "that the value in the infringing machine of the rifles is fixed by the Craig-Hoskin contract;"

Whereas the said master ought to have certified that the Craig-Hoskin contract cannot be taken into account in fixing a royalty on the rifles, because—first, it is a contract entered into between two defendants at a time when the subject-matter of the contract was in litigation and when it was apparent that more litigation would follow; secondly, because the license fee or royalty established 528 by said contract covered all the patents owned by Craig, to the number of three, besides the rifle patent; thirdly, because the defendants have not shown what proportion of the license fee or royalty fixed by the contract went to the rifle patent, and because, further, the acts of the defendant Hoskin in selling rifles to other parties for two dollars and a half a set after the date of the contract is evidence that the parties themselves did not consider the amounts named in the contract to be a license fee or royalty on the rifles alone.

Second exception. For that the said master hath certified that "a claim for profits derived from repairing such infringing machines could no more be sustained than a claim for profits derived from repairing the machine of the patentee himself. The claim for profits on repairs is not allowed;"

Whereas said master ought to have certified that the complainant- *is* entitled to all the advantages the defendants derived from the infringement of complainants' patent; that the business, 529 as held, managed, and conducted by the defendants, was a monopoly which practically shut out competition, and it was this fact that brought them the repairs. No other manufacturer had the proper and necessary patterns to enable them to repair such machines; hence the repairing of said machines was an advantage and profit to defendants arising out of their infringement and ought to be allowed.

Third exception. For that the said master hath certified that "whatever profits have been made by respondents Craig have arisen from the assignment to Hoskin by them of patents which they owned, and complainants can have no interest in such profits," whereas said master should have certified that as the respondents Craigs were parties to said infringement, and received a portion of the profits of said infringement they are liable to that extent in this according; that the only patent named in the Craig-Hoskin contract which was used in the construction of the Little Giant machine was the one covereing de Macy & Martin's rifle, and the royalty fixed by said contract was more in the nature of a consideration for 530 t*ie*ing up the other patents named in the contract, so as to prevent others from getting hold of them and breaking the monopoly; that the proportion of royalty in the rifle patent, as compared with the entire royalty named in the contract, is fixed by the defendant Hoskin by his selling rifles to other parties for two dollars and a half per set to go into opposing machines; and as defendant Hoskin in his testimony in this accounting admits that in calculating the cost price of the machines he had deducted the cost (two dollars and a half) of the rifles in each machine accounted for, no further royalty ought to be allowed on them, and therefore the money received by the Craigs is a part of the profits derived from the manufacture and sale of the infringing machines, and ought to go to the complainant.

Respectfully submitted,

JOHN L. BOONE,
Solicitor for Complainants.

(Endorsed:) Filed June 9, '83. L. S. B. Sawyer, clerk, by J. F. O'Beirne, deputy clerk.

Respondents' Exceptions to Master's Report.

531 In the United States Circuit Court, Ninth Circuit, District of California.

FRANK H. FISHER *et al.*, Complainants,
vs.
RICHARD HOSKIN *et al.*, Defendants.
No. 2296.

Exceptions taken by the defendants, Richard Hoskin and Joseph Hoskin, to the report made herein by S. C. Houghton, master in chancery, to whom this cause was referred by order of this court.

First exception. The said defendants except to said report for that the said master in his said report has found and reported that the use of the complainants' invention enabled the defendants to produce a machine which controlled the market, and that they left open to the miners no other way of supplying their needs in this direction, whereas the said master should have found and reported that the respondents had the full control and monopoly of the 532 market for hydraulic machines by virtue of the various United States letters patent which they owned and the decrees of this court enjoining other parties, including the complainant Fisher, from infringing those patents and that there were well-known single-jointed machines which were not covered by any patents except such as the defendants owned, which single-jointed machines were adequate to all the requirements of hydraulic mining and which defendants would have made and sold to the miners if the miners had refused to purchase the two-jointed machines.

Second exception. For that the said master in his said report has in effect found and reported that the success of the "Little Giant" machines and all the beneficial and pecuniary advantages belonging to them were entirely owing to the invention called rifles, which were covered by the Macy and Martin patent and to the complainants' invention, and that nothing was gained of a pecuniary nature by the defendants' improvements, whereas the master should 533 have found that the improvements made by the defendants, which were embodied in the said Little Giant machines, were of very great advantage and of great pecuniary value; that such improvements of the defendants enabled them to make a Little Giant machine at less than two-thirds of the weight and of equal capacity with the Hydraulic Chief machines made by complainant Fisher, as described in his letters patent, thereby saving over one-third of the cost of the material in the machine and in the cost of its transportation and moving. The master should also have found and directed that the improvements of the defendants, embodied in the said Little Giant machines and which were not in the said Hydraulic Chief or the complainants' said letters patent, enabled the defendants and miners using the machines to dispense with the system of compound levers shown in said patent and necessary to the Hydraulic Chiefs, and thereby the entire cost of such system of levers was saved.

534 Third exception. For that the said master found and reported in effect that the complainants were entitled to recover all the net profits made by the defendants Hostin in the manufacture and sale of the Little Giant machines, except the amount which they paid to the defendants, being for the use of the inventions covered by their patents, including the said Macy and Martin so-called "rifles," whereas the said master should have found and reported that the said Macy and Martin patent expired on the eighth day of December, 1880; that the defendants Hoskin paid no royalty on that patent after it expired; that the value of the rifles in each one of the Little Giant machines was the same after the eighth day of December as it was before that date, and that the value of the rifles in each and all of the Little Giant machines should have been allowed on all the Little Giants made and sold by the defendants after the eighth day of December, 1880, as well as on those 535 made and sold before that date; that there should have been taken out of the net profits made by the defendants the value of the rifles in every one of the Little Giant machines instead of only a part of them.

Fourth exception. For that the master found and reported in effect that the complainant Fisher's invention was necessary to the successful working of hydraulic mining machines, and that no others were marketable, whereas he should have found and reported that such invention was not necessary to the successful use of such machines, but that the known single-jointed machines which did not contain complainant Fisher's invention were equally useful and convenient, equally adequate in all respects, and were and could have been made and transported much cheaper than could either the Little Giant or Hydraulic Chief machines, and were equally marketable.

Fifth exception. For that the master found and reported that the value of the defendants' patent, including the Macy and Martin rifle patent, was fixed by the contract made by and between 536 the defendants Hoskin and the defendants Craig, which contract is in evidence, but in his report the master gave the defendants a credit on account of their Macy and Martin and other patents of only ten thousand and seventy-five dollars, whereas the value of such invention, as fixed by said contract, on the three hundred and fifty-five machines made and sold by defendants, amounts to not less than twenty thousand two hundred and fifty-five dollars, and the defendants should have been given credit for that amount.

Sixth exception. For that the master has reported that the defendants gained advantages by using the complainants' invention of sixteen thousand four hundred and sixty-five $\frac{33}{100}$ dollars, whereas he should have found and reported that the complainants had failed to prove that the defendants had made any gains or profits from using such invention, and should have found and reported under all the evidence that the defendants had not gained any advantage or made any profits from using the complainants' invention.

537

M. A. WHEATON,
Salicitor for Defendants.

(Endorsed :) Filed June 20th, 1883. L. S. B. Sawyer, clerk, by J. F. O'Beirne, deputy clerk.

At a stated term, to wit, the February term, A. D. 1884, of the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, held at the court-room, in the city and county of San Francisco, on Monday, the 3rd day of March, in the year of our Lord one thousand eight hundred and eighty-four.

Present: The Honorable Lorenzo Sawyer, circuit judge.

Certified Copy of Order Confirming Master's Report.

FRANK H. FISHER
vs. } No. 2296.
RICHARD HOSKIN *et al.*

538 This cause, heretofore argued and submitted to the court for consideration and decision upon the complainant's and defendants' exceptions to the master's report herein, having been duly considered, it is ordered that said exceptions be, and they are hereby, overruled and that said master's report be, and the same hereby is, confirmed. It is further ordered that a decree be entered herein accordingly.

(Endorsed.)

I hereby certify that the foregoing is a full, true, and correct copy of an original order made and entered in the above-entitled cause.

Attest my hand and the seal of said circuit court this 7th day of March, A. D. 1884.

[SEAL.]
L. S. B. SAWYER, *Clerk*,
By F. D. MONCTON,
Deputy Clerk.

Enrollment.

United States Circuit Court, Ninth Circuit, District of California.

FRANK H. FISHER *et al.*, Complainants,
vs. } No. 2296.
RICHARD HOSKIN *et al.*, Defendants.

539 The complainants filed their bill of complaint herein on the 8th day of May, 1880, which is hereto annexed.

A subpœna to appear and answer in said cause was thereupon issued, returnable on the first Monday of June, A. D. 1880, which is hereto annexed.

The defendant appeared herein on the 7th day of June, 1880, by Wheaton & Scrivner, Esqs., their solicitors.

On the 10th day of July, 1880, an answer was filed herein, which is hereto annexed.

A replication to said answer was filed on the 25th day of September, 1880, which replication is hereto annexed.

An interlocutory decree was filed and entered herein on the 17th day of March, 1882, which is hereto annexed.

On the 29th day of May, 1882, a rehearing was ordered herein, a certified copy of which order is hereto annexed.

An interlocutory decree was filed and entered herein on the 4th day of September, 1882, and the cause referred to S. C. 540 Houghton, Esq., master, &c., to take and state an account, &c., which interlocutory decree is hereto annexed.

On the 21st day of May, 1883, the master filed his report herein, for which reference is hereby made to the files herein.

On the 9th day of June, 1883, complainants' exceptions to said master's report were filed herein, which exceptions are hereto annexed.

On the 20th day of June, 1883, respondents' exceptions to said master's report were filed herein, which exceptions are hereto annexed.

On the 3rd day of March, 1884, an order overruling said exceptions to said master's report was made & entered herein, a certified copy of which order is hereto annexed.

Thereafter a final decree was filed and entered herein in the words and figures following, to wit:

Final Decree.

In the Circuit Court of the United States, District of California, Ninth Circuit.

541 Frank H. Fisher and Joshua Hendy, Complainant-,

vs.

Richard Hosking, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, Defendants.

At a stated term of the circuit court of the United States of America of the ninth judicial circuit in and for the District of California, held at the court-room thereof, in the city and county of San Francisco, on Monday, the 3d day of March, A. D. 1884.

Present: The Honorable Lorenzo Sawyer, circuit judge.

This cause having been heard by the court at the February term thereof, in the year 1882, on the pleadings and proofs, documentary and oral, taken and filed therein, and an interlocutory decree having been filed and entered in said cause on the 4th day of September, A. D. 1882, wherein it was ordered, adjudged, and 542 decreed that the reissued letters patent of the United States numbered 8876 and issued to Frank H. Fisher, one of the said complainants, were good and valid in law; that the said Frank H. Fisher was the first and original inventor of the invention therein described and claimed; that the complainants herein were the sole and exclusive owners thereof, and that the said defendants, Richard Hoskin and J. H. Hoskin, had infringed upon the exclusive rights of the complainants under the same, and which said interlocutory decree further ordered that the matter be referred to S. C. Houghton, Esq., master in chancery of said court, to take and state and report to the court the gains, profits, and advantages which the said defendants, Richard Hoskin and J. H. Hoskin, or either of them, had derived or which had accrued or arisen to them from infringing upon complainants' said letters patent No. 8876, referred to in said interlocutory decree;

543 And the said master having filed his report in pursuance of the said order contained in said decree assessing and fixing the said gains, profits, and advantages at the sum of sixteen thousand four hundred and sixty-five dollars and thirty-three cents ($16,465.33), and the court having this day confirmed said report and ordered that a final decree be entered herein in accordance therewith:

Now, therefore, it is hereby ordered, adjudged, and decreed that the said defendants, Richard Hoskin and J. H. Hoskin, pay said complainants the said sum of sixteen thousand four hundred and sixty-five dollars and thirty-three cents ($16,465.33), with legal interest thereon from the said 4th day of September, A. D. 1882, and for complainants' proper costs and disbursements in this cause, to be taxed by the clerk of said court.

(Signed) LORENZO SAWYER,
U. S. Circuit Judge, 9th Judicial Circuit.

544 (Endorsed:) Filed & entered March 7, 1884. L. S. B. Sawyer, clerk.

Memorandum of Costs and Disbursements.

UNITED STATES OF AMERICA:

Circuit Court of the United States, Ninth Circuit, District of California.

FRANK H. FISHER *et al.*, Plaintiffs,
vs.
RICHARD HOSKIN *et al.*, Defendants.

Disbursements:

Marshal's fees	$183	70
Clerk's fees	62	70
Witness fees—Stockman, two days; Hanscom, one day	4	50
Examining 26 witnesses, see memorandum, over	65	00
Master's fees on accounting	188	20
Docket fee	20	00
	$544	10
Examiner's fees, original hearing	63	00
Taxed at	$607	10

L. S. B. SAWYER, *Clerk.*

UNITED STATES OF AMERICA,
District of California, City and County of San Francisco, } *ss:*

545 John L. Boone, being duly sworn, deposes and says that he is the solicitor for the complainants in the above-entitled cause, and as such is better informed relative to the above costs and disbursements than the said complainants.

That the items in the above memorandum contained are correct, to the best of this deponent's knowledge and belief, and that the said disbursements have been necessarily incurred in the said cause.

JOHN L. BOONE.

Subscribed and sworn to before me this 8th day of March, A. D. 1884.

F. D. MONCTON,
Commissioner of U. S. Circuit Court, &c.

To M. A. Wheaton, Esq., solicitor for defendants:

You will please take notice that on Monday, the tenth day of March, A. D. 1884, at the hour of 11 o'clock a. m., I will apply to the clerk of said court to have the within memorandum of costs and disbursements taxed pursuant to the rule of said court in such case made and provided.

JOHN L. BOONE,
Attorney for Complainants.

546 *List of Witness- Examined on Main Case.*

1. F. H. Fisher.
2. J. M. Stockman.
3. W. W. Hanscom.
4. F. Formhals.
5. R. Hoskin.
6. H. B. Angel.

List of Witnesses on Accounting.

7. Richard Hoskin.
8. Jas. H. Bradley.
9. Walter R. Craig.
10. Joseph Craig.
11. John Pattison.
12. Jas. V. Patterson.
13. E. P. Hubbard.
14. J. K. Parkinson.
15. F. H. Fisher.
16. Jos. McGiloray.
17. Geo. M. Taylor.
18. Jason Brink.
19. E. H. Willard.
20. Plilip Nichols.
21. Thos. Manly.
22. J. H. Hoskin.
23. J. M. Allis.
24. H. Burns.
25. John Timmons.
26. Geo. H. Rogers.

547 (Endorsed.)

Service and receipt of a copy of within cost bill admitted this 8th day of March, 1884.

M. A. WHEATON,
Attorney for Defend'ts.

Filed this 8th day of March, A. D. 1884.

L. S. B. SAWYER, *Clerk,*
By F. D. MONCTON,
Deputy Clerk.

Clerk's Certificate to En'd Papers.

Whereupon said pleadings, subpœna, certified copies of orders, reference to master's reports, exceptions, decrees, and memorandums of taxed costs are hereto annexed, said final decree being duly signed, filed, and enrolled pursuant to the practice of said circuit court.

Attest, &c.

L. S. B. SAWYER, *Clerk,*
[SEAL.] By F. D. MONCTON,
Deputy Clerk.

(Endorsed:) Filed March 7th, 1884. L. S. B. Sawyer, clerk, by F. D. Moncton, deputy clerk.

548 COMPLAINANTS' EXHIBIT A A.

THE UNITED STATES OF AMERICA.

(Vignette.)

Reissue No. 8873.

To all to whom these presents shall come:

Whereas Frank H. Fisher, of Nevada City, California, has presented to the Commissioner of Patents a petition praying for the reissue of letters patent for an alleged new and useful improvement in hydraulic mining apparatus, for which letters patent were issued to him dated December 20, 1870, the same surrendered and new letters issued to him dated December 17, 1872, which last letters having been surrendered, the same have been canceled, and new letters ordered to issue to him on an amended specification, a description of which invention is contained in the specification of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such cases made and provided; and whereas, upon due examination made, the said claimant is adjudged to be justly entitled to a patent under the law:

549 Now, therefore, these letters patent are to grant unto the said Frank H. Fisher, his heirs or assigns, for the term of seventeen years from the twentieth day of December, one thousand

eight hundred and seventy, the exclusive right to make, use, and vend the said invention throughout the United States and the Territories thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the city of Washington, this second day of September, in the year of our Lord one thousand eight hundred and seventy-nine, and of the Independence of the United States of America the one hundred and fourth.

[SEAL.] A. BELL,
Acting Secretary of the Interior.

Countersigned:
W. H. DOOLITTLE,
Acting Commissioner of Patents.

(Here follows diagram marked p. 550.)

551 UNITED STATES PATENT OFFICE.

FRANK H. FISHER, of Nevada City, California.

Improvement in Hydraulic Mining Apparatus.

Specifications forming part of Letters Patent No. 110,222, dated December 20, 1870; reissue No. 5193, dated December 17, 1872; reissue No. 8876, dated September 2, 1879; application filed March 29, 1879.

To all whom it may concern:

Be it known that I, Frank H. Fisher, of Nevada City, Nevada county, State of California, have invented an improvement in hydraulic mining apparatus; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it mostly appertains to make and use my said invention without further invention or experiment.

552 My invention relates to an improved construction and arrangement of that class of hydraulic pipes and nozzles which are used for directing and delivering a stream or column of water against a bank in hydraulic mining.

My improvement consists in such an arrangement of the pipe and nozzle that the nozzle can have both horizontal and vertical play through the medium of two moving water-tight joints, for the purpose of facing it to any desired point of the compass, without shutting off the water or stopping the work of the machine.

In the drawings figure 1 is a longitudinal section of my improved mining apparatus. Fig. 2 is a horizontal section of the same, taken on the plane of the line *x x*, Fig. 1. Fig. 3 is an inner view of the discharge nozzle, and Fig. 4 is transverse section of a part of the same.

The same letters of reference in the drawings indicate the same parts.

A represents a section of pipe through which water is forced
553 by a steam pump or other forcing apparatus or by its own
pressure when conducted from higher points. This section, A,
I bend upward in the form of an elbow, as shown at Fig. 1. To the upper end of this section or elbow I connect one end of another elbow, B, by means of a swivel connection or joint, which is formed by the two horizontal flanges *a c* on the outer meeting edges of the sections. These flanges are placed together and held by a ring, *b*, which carries friction rollers *d d* that fit and bear against the under side of the lower flange.

Packing *e* is interposed between the flanges *a c*, as shown. The elbow B, to which is pivoted a handle or lever, C, can then be freely turned or swiveled on the elbow A and still will form a water-tight joint.

To the outer end of the elbow B is screwed a place, D, which has semicircular projecting ears and flanges on the same to receive the correspondingly shaped end or ball joint of the discharge pipe E.

The pipe E carrying the nozzle has a projecting slotted
554 post, *f*, which has friction rollers *g g*, that work above and
below a lever, F, passing between them. The lever F is pivoted to a post, *h*, that projects from the elbow B, and is connected with the lever C by a rod, *i*, while its front end passes through the slotted post *f*, as shown.

The ball-and-socket joint formed by the discharge pipe E on the elbow B permits the same to be swung up or down at will, while it can be swung horizontally with the elbow B.

All the motions can be executed by means of the handle C, which is pivoted to swing up or down.

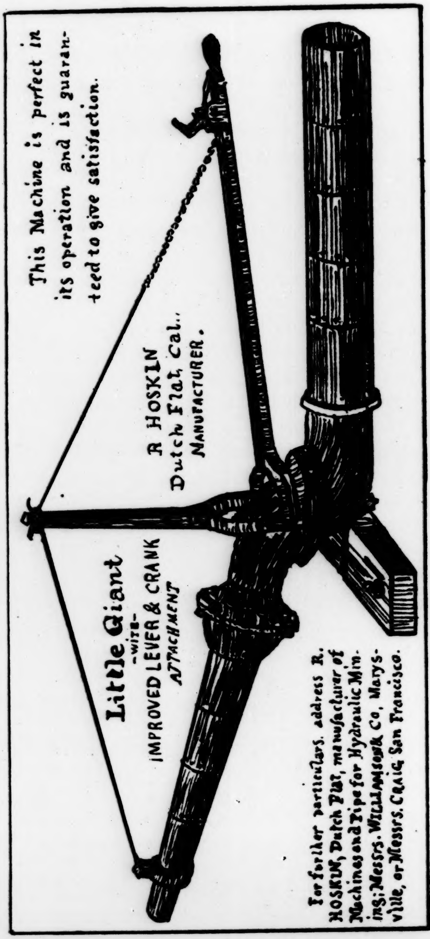
It may be provided with a pawl or slide, *j*, to lock into a rack or toothed projection, K, of the elbow B for the purpose of securing the nozzle at any desired elevation. The pressure of the water holds the ball joint closed and water tight. The discharge pipe, as well as the swivel elbow, may have inner ribs or partitions, *l*, for guiding the water straight forward. By this arrangement the nozzle or discharge pipe E can be raised or lowered or turned horizontally to any
desired position while working.

555 It will be noticed that both of the joints employed in this
machine are close-moving metallic joints—that is, the meeting parts of the joints are made of metal—and more particularly the outer joint, which gives the vertical movement to the discharge pipe and nozzle, so that the movement of the discharge section is limited to the single action between the two parts by which it is joined to the swiveled section; or, in other words, there is no movement except at the single point where the parts fit together.

I am aware that hydraulic machines of this class have heretofore been made with horizontal joints for allowing the upper section B to swivel in a horizontal plane; and I am also aware that a canvas or hose section has been introduced in the length of the discharge pipe in order to give flexibility for directing the forward end of the discharge pipe independent of the horizontal joint within a limited range both up and down or to either side; but these machines were

No. 169.
Haskin et al.
v.
Fisher et al.
p. 558.

"Complainants' Exhibit E. E."



This Machine is perfect in its operation and is guaranteed to give satisfaction.

R HOSKIN
Dutch Flat, Cal.
MANUFACTURER.

Little Giant
-WITH-
IMPROVED LEVER & CRANK
ATTACHMENT

For further particulars, address R. HOSKIN, Dutch Flat, manufacturer of Machines and Pipe for Hydraulic Mining; Messrs. WILLIAMSON & Co, Marysville, or Messrs. CRAIG San Francisco.

dangerous, as the flexibility of the hose or canvas section and its liability to get kinked would often cause it to be caught by
556 the stream in a wrinkled condition, so that the force of the stream on the bent end would cause the discharge pipe to fly out of the hands of the attendant and sweep around in a circle with tremendous force, in many instances wounding and in some instances killing the workmen and bystanders. This accident was so common to this class of machines that it became known to miners as "bucking." The greatest care was necessary in handling the pipe, and even then the machine would often buck. It is therefore necessary to confine the moving joint of rigid material, constructed as above described.

In using this machine the horizontal joint only serves as a means for allowing the upper section B and discharge pipe to be faced around in the required direction, while the forward joint allows a vertical movement to be given to the discharge pipe, in order to throw the stream at the desired elevation.

Having thus described my invention, what I claim and desire to secure by letters patent, is—

557 1. The swivel-jointed sections A B and ball-and-socket-jointed section D E, combined, as described, with the lever F, working through slotted posts *f*, strap *i*, lever C, and pawl and ratchet *j* K, for the purpose set forth.

2. A ball-and-socket joint for connecting the discharge pipe of a hydraulic mining apparatus with the end of a swivel section, B, substantially as above described.

3. The discharge pipe E, having a semi-cylindrical or ball shaped enlargement at its base, in combination with a corresponding cup-shaped socket, D, on the end of the horizontally-swiveling section B, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

FRANK H. FISHER. [L. S.]

Witness:
L. D. LATIMER.
WM. FLOYD DUCKETT.

(Here follows diagram marked p. 558.)

559 EXHIBIT No. 5.

Certificate U. S. Patent Office.

THE U. S. PATENT OFFICE.

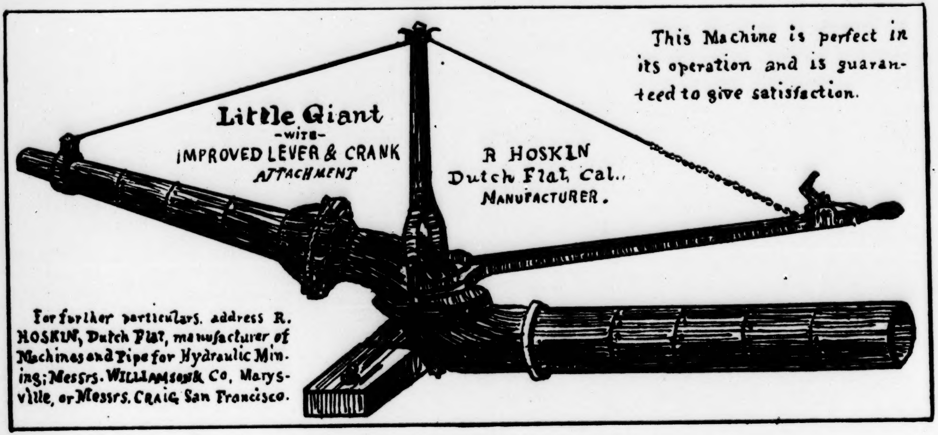
(Vignette.)

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted Frank H. Fisher, dated December 20th, 1870, No. 110,222, for improvement in hydraulic mining apparatus.

"Complainants' Exhibit E. E."

No. 169.
Haskin et al.
v.
Fisher et al.
p. 558.



Little Giant
-WITH-
IMPROVED LEVER & CRANK
ATTACHMENT

This Machine is perfect in its operation and is guaranteed to give satisfaction.

R HOSKIN
Dutch Flat, Cal.,
MANUFACTURER.

For further particulars, address R. HOSKIN, Dutch Flat, manufacturer of Machines and Pipe for Hydraulic Mining; Messrs. WILLIAMSON & Co, Marysville, or Messrs. CRAIG San Francisco.

dangerous, as the flexibility of the hose or canvas section and its liability to get kinked would often cause it to be caught by
556 the stream in a wrinkled condition, so that the force of the stream on the bent end would cause the discharge pipe to fly out of the hands of the attendant and sweep around in a circle with tremendous force, in many instances wounding and in some instances killing the workmen and bystanders. This accident was so common to this class of machines that it became known to miners as "bucking." The greatest care was necessary in handling the pipe, and even then the machine would often buck. It is therefore necessary to confine the moving joint of rigid material, constructed as above described.

In using this machine the horizontal joint only serves as a means for allowing the upper section B and discharge pipe to be faced around in the required direction, while the forward joint allows a vertical movement to be given to the discharge pipe, in order to throw the stream at the desired elevation.

Having thus described my invention, what I claim and desire to secure by letters patent, is—

557 1. The swivel-jointed sections A B and ball-and-socket-jointed section D E, combined, as described, with the lever F, working through slotted posts *f*, strap *i*, lever C, and pawl and ratchet *j* K, for the purpose set forth.

2. A ball-and-socket joint for connecting the discharge pipe of a hydraulic mining apparatus with the end of a swivel section, B, substantially as above described.

3. The discharge pipe E, having a semi-cylindrical or ball shaped enlargement at its base, in combination with a corresponding cup-shaped socket, D, on the end of the horizontally-swiveling section B, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

FRANK H. FISHER. [L. S.]

Witness:
L. D. LATIMER.
WM. FLOYD DUCKETT.

(Here follows diagram marked p. 558.)

559

EXHIBIT No. 5.

Certificate U. S. Patent Office.

THE U. S. PATENT OFFICE.

(Vignette.)

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted Frank H. Fisher, dated December 20th, 1870, No. 110,222, for improvement in hydraulic mining apparatus.

In testimony whereof I, J. M. Thacher, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this eighth day of March, in the year of our Lord one thousand eight hundred and seventy-three, and of the Independence of the United States the ninety-seventh.

[SEAL.] J. M. THACHER,
Acting Commissioner.

No. 110,222.

THE UNITED STATES OF AMERICA.

(Vignette.)

To all to whom these letters patent shall come:

560 Whereas Frank H. Fisher, of Nevada City, California, has alleged that he has invented a new and useful improvement in hydraulic mining apparatus, and has made oath that he is a citizen of the United States; that he verily believes he is the original and first inventor or discoverer of the said improvement, and that the same hath not to his knowledge and belief been previously known or used, has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents praying that a patent may be issued therefor:

These are, therefore, to grant to the said Frank H. Fisher, his executors, administrators, or assigns, for the term of seventeen years from the twentieth day of December, one thousand eight hundred and seventy, the full and exclusive right and liberty of making, using, and vending to others to be used, the said improvement, a description whereof is given in the annexed schedule and made a part of these presents.

561 In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office to be hereunto affixed.

Given under my hand, at the city of Washington, on this twentieth day of December, in the year of our Lord one thousand eight hunderd and seventy, and of the Independence of the United States of America the ninety-fifth.

[SEAL.] W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and seal- with the seal of the Patent Office
SAM'L A. DUNCAN,
Acting Commissioner of Patents.

(Here follows diagram marked p. 562.)

563 United States Patent Office.

Frank H. Fisher, of Nevada City, California.

Letters Patent No. 110,222, dated December 20, 1870.

Improvement in Hydraulic Mining Apparatus.

The schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, Frank H. Fisher, of Nevada City, in the county of Nevada and State of California, have invented a new and improved hydraulic mining apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a longitudinal section of my improved mining apparatus.

Figure 2 is a horizontal section of the same, taken on the plane of the line *x x*, Fig. 1.

564 Figure 3 is an inner end view of the discharge nozzle.

Figure 4, a transverse section of a part of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new apparatus for discharging water against hills and mountains for mining purposes, and has for its object to permit the directing of the discharge nozzle to any suitable height or at any suitable angle, horizontally and vertically.

The proper washing of the surface can thus be produced without great exertion or difficulty.

A, in the drawing, represents the outer end of the pipe, through which the water is forced by the natural pressure of water conducted from higher points, in pipes or otherwise, or by a steam pump or other suitable machinery.

This outer end I prefer to have in form of an upward bent elbow, as shown in Fig. 1.

Upon the elbow A is secured another swivel elbow, B,
565 whose lower flange, *a*, is secured to a ring, *b*, that embraces the upper *c* of the elbow A.

The ring *b* carries friction rollers *d d* that fit against the under side of the flange *c*.

Packing *e* is interposed between the flanges *a c*, as shown.

The elbow B, to which is pivoted a handle, C, can thus be freely turned on the elbow A, and will still always form a water-tight point.

To the outer end of the elbow B is screwed a plate, D, which has semicircular projecting ears and flanges on the same to receive the semi-cylindrical end or ball joint of the discharge pipe E.

The pipe E, carrying the nozzle, has a projecting slotted post, *f*, which has friction rollers *g g*, that work above and below a lever, F, passing between them.

The lever F is pivoted to a post, *h*, that projects from the elbow B and is connected with the lever C by a rod, *i*, while its front end passes through the slotted post *f*, as shown.

566 The ball-and-socket joint formed by the discharge pipe E on the elbow B permits the same to be swung up or down at will. It can be swung horizontally with the elbow B.

All the motions can be executed by means of the handles C, which *is* pivoted to swing up and down.

It may be provided with a pawl or slide, *j*, to lock into a rack or toothed projection, *k*, of the elbow B, for the purpose of securing the nozzle at any desired elevation.

The pressure of the water holds the ball joint closed and water-tight.

The discharge pipe, as well as the swivel elbow, may have inner ribs or partitions *l* for guiding the water straight forward.

Having thus described my invention, I claim as new and desire to secure by letters patent—

The swivel-jointed nozzle and pipes A B D E, combined, as described, with the lever F, working through slotted post *f*, strap *i*, lever *c*, and pawl and ratchet *j k*, for the purpose specified.

FRANK H. FISHER.

Witnesses:
C. H. MEAD.
B. F. STOAKES.

567 *Caption.*

In the Circuit Court of the United States for the Ninth Judicial Circuit and District of California.

Frank H. Fisher *et al.* *vs.* Richard Hoskins *et al.*

Be it remembered that on this 25th day of October, A. D. 1880, at my office, in the city and county of San Francisco, before me, J. F. O'Beirne, an examiner in chancery, duly appointed by the circuit court of the United States for the ninth circuit and district of California, personally appeared the persons hereinafter named, witnesses on behalf of the respective parties in the above-entitled action.

John L. Boone appeared as counsel for complainant- and J. J. Scrivner, Esq., as counsel for respondent-.

And the said witnesses, having been by me first duly sworn to tell the truth, the whole truth, and nothing but the truth in the cause aforesaid, did then and there depose and say as follows—that is to say:

Ex. A.

(Complainant- puts in evidence certified copy of reissued letters — No. 8876, dated September 2, 1879, issued to Frank H. Fisher 568 for improvements in hydraulic mining apparatus, being a reissue of letters patent No. 110,222, dated December 2, 1870, and reissued letters patent No. 5193, dated December 17, 1872, marked "Complainants' Exhibit A A.")

Deposition of Frank H. Fisher.

Examination-in-chief of FRANK H. FISHER (a witness on behalf of complainant-) by Mr. BOONE:

Q. 1. Are you one of the complainants in this action?
A. Yes, sir.
Q. 2. Are you one of the owners of the patent, Exhibit A A?
A. I am.
Q. 3. What interest do you own in the patent?
A. One-half.
Q. 4. Who owns the other half?
A. Joshua Hendy.
Q. 5. He is one of the complainants in this action, is he?
A. He is.
Q. 6. Are you the inventor of the devices described and claimed in the letters patent, Exhibit A A?
569 A. I am.

Ex. B.

(Complainant- puts in evidence model of the invention described in the patent, Exhibit A, marked "Complainants' Exhibit B B.")

Q. 7. Take the model, Exhibit B B, and state what your invention is.

A. My invention is for a hydraulic mining apparatus having two joints in combination with a discharge pipe with an enlargement at its base, with a cup shape on the end of the upper section of the horizontal joint to receive the base of the discharge pipe, making a metal joint of two parts working on each other to give the pipe an up-and-down movement; also a lever apparatus for moving and balancing the pipe.

(In order to enable counsel to examine the testimony in the case of Fisher *vs.* Craig, a continuance is taken until Saturday, 30th instant, at 11 o'clock a. m.)

570 *Stipulation as to Evidence in Fisher* vs. *Craig.*

SATURDAY, *October* 30, 1880.

Present: Mr. Boone, of counsel for complainant; Mr. Scrivner, of counsel for respondent.

It is stipulated and agreed by and between the counsel for the respective parties herein that the evidence taken and on file in this court in the case of Fisher *vs.* Craig, number 1144, shall be considered in evidence in this case, reserving, however, to each party the right to introduce such additional evidence as they may desire.

It is further agreed that, in case any exhibits introduced in evidence in said case of Fisher *vs.* Craig shall be missing from the files, the same may be supplied, each party supplying his own exhibits.

Ex. C.

Complainant- puts in evidence original assignment of a half interest in the letters patent, Exhibit A A, from Frank A. Fisher to Joshua

Hendy, dated May 7, 1880, and recorded in the United States Patent Office May 25, 1880, in Liber K 25, page 332, marked "Complainants' Exhibit C C."

It is agreed by respondents' counsel that the original document, Exhibit C C, now produced and put in evidence, may be 571 withdrawn and a copy substituted in lieu thereof.

Complainants presents model, marked "Exhibit I," introduced in evidence in the case of Fisher *vs.* Craig as a model of the Little Giant hydraulic machine manufactured by the respondents.

Respondents admitted that they have made and sold Little Giant hydraulic machines since the date of the patent, Exhibit A A, and before the commencement of this suit, and that the said machines consisted of two curved sections and a discharge pipe; that the upper end of the lower curved section and the lower end of the upper curved section were connected by a horizontal or swivel joint, and that the upper end of the upper curved section was connected to the rear end of the discharge pipe by a joint consisting of an enlargement fitting into a corresponding opening or recess and connected thereto by pivots on which the joint swings and so arranged as to give vertical movement to the discharge pipe; that the enlargement was upon the upper end of the upper curved section, while the corresponding opening or recess into which it fitted was on the rear end of the discharge pipe, and that both of these joints were used in each machine manufactured and sold by them.

572 Respondents will produce and put in evidence a correct model of the Little Giant machines made and sold by respondents, illustrating the description set forth in the above admission, said model to be used in connection with the description in said admission contained, said admission to be inoperative until the said model is introduced.

Examination-in-chief of FRANK H. FISHER (continued).

By MR. BOONE:

Q. 8. Do you know whether or not the respondents in this case have manufactured or sold any hydraulic machines since the date of your reissued letters patent, "Exhibit A A?"

A. Not to my knowledge.

Q. 9. Are you familiar with the machines manufactured and sold by them prior to the commencement of the suit of Fisher *vs.* Craig, number 1144, in this court?

A. Yes; I am.

573 Q. 10. State whether the joints in that machine were constructed and arranged similar to those described and claimed in your letters patent, Exhibit A.

A. Yes, sir; they are.

Q. 11. If there was any difference, state what it was.

A. There is no material difference in the Little Giant machine. The ball is on the upper end of the elbow and the socket is on the end of the discharge pipe, while in the Fisher machine the ball is on the end of the discharge pipe and the socket on the upper end of the elbow.

Q. 12. What is the object of the ball-and-socket joint?

A. That is to give the pipe vertical movement, up and down movement.

Q. 13. Does it accomplish this in both machines?

A. It does.

Q. 14. In the same way?

A. In the same way.

Q. 15. Are you familiar with mechanics and the construction of machines?

A. Well, generally speaking, I am.

Q. 16. From your knowledge of mechanics would you say that the arrangement of the parts forming this joint in the Little Giant machine was the equivalent of that described in your patent, Exhibit A A?

A. I would.

574 (Continued until Thursday, November 4th, at 2 o'clock p. m.)

THURSDAY, *November* 4, 1880.

(Continued by consent until to-morrow, 5th instant, at 2 o'clock p. m.

FRIDAY, *November* 5, 1880.

Present: Mr. Boone, of counsel for complainant-; Mr. Scrivner, of counsel for respondent-.

There are now produced models introduced in evidence in the case of Fisher *vs.* Craig, number 1144, in this court, marked as follows: Exhibit D, Exhibit E (connected with Exhibit D), Exhibit J, Exhibit L, Exhibit M, and a model, the mark upon which has been destroyed, which is admitted to be a model of the Jenkin-Richards hydraulic machine.

575 Cross-examination of FRANK H. FISHER by Mr. SCRIVNER:

Q. 1. When did you make the invention described in your reissued patent, Exhibit A A?

A. I made it when I first made the machines; I think in 1869 or the spring of 1870.

Q. 2. The machine, then, described in Exhibit A A is the same machine that you described in your original patent, number 110,222, is it?

A. Yes, sir; it has never been altered.

Q. 3. What was your object in reissuing the second time, taking out the reissued patent, Exhibit A A?

A. I didn't specify my claim originally in as many words as I might have done. I did not claim all that I was entitled to.

Q. 4 What is there claimed in Exhibit A A that you had not claimed in your original patent, number 110,222, and in your reissued patent, number 5193?

A. I don't know exactly how my first patent read. The claim in the reissued patent, Exhibit A A, is for the two elbows and the two joints, horizontal and vertical, in connection with a discharge pipe, with an enlargement at its base.

576 Q. 5. Which one of the claims in Exhibit A A do you think that the respondent's machine infringes?

A. I claim that he infringes in the three claims.

Q. 6. Just read the first claim of Exhibit A A.

A. (Reads): "The swivel-jointed sections A B and ball-and-socket-jointed sections D E, combined as described with the lever F working through slotted posts *f*, strap *i*, lever *c*, and pawl and ratchet *j k* for the purpose set forth."

Q. 7. Take the model of your machine, Exhibit B B, and point out the swivel-jointed sections A B.

A. It is the horizontal joint where the two elbows come together.

Q. 8. Point out the ball-and-socket-jointed sections D E.

A. That is on the upper end of the upper elbow.

Q. 9. Describe the ball-and-socket joint.

A. A ball-and-socket joint is a ball with a cup for the ball to work in.

Q. 10. Where is the ball in your machine?

A. The ball is on the end of the discharge pipe.

577 Q. 11. Is there any ball on the end of the discharge pipe in Exhibit B B?

A. Yes; there is a ball there.

Q. 12. Is it a round ball?

A. Well, it is a portion of a ball; a portion of it is round.

Q. 13. What portion of a ball is that?

A. It is little more than half of a ball.

Q. 14. Is it not part of a cylinder; is it not cylindrical in shape?

A. Well, a portion of it is. A portion of a ball is cylindrical in shape.

Q. 15. When you describe that as being a semi-cylindrical joint, is not that correct?

A. I don't know but what it might be termed a semi-cylindrical joint; at the same time it is termed a ball joint.

Q. 16. In mechanics a ball-and-socket joint is also represented by a ball working in a socket, is it not?

A. Not always.

Q. 17. Can you give any instances of a ball-and-socket joint where anything different from a spherical ball has been used?

A. Well, I don't know.

Q. 18. In a ball-and-socket joint what holds the ball in the socket?

A. It can be held in a good many different ways.

578 Q. 19. As ordinarily understood by mechanics, how is the ball held in the socket?

A. The ball either works in the socket or over the socket, as you might arrange it.

Q. 20. Did you ever see a ball-and-socket joint in which the ball worked over the socket, in which the socket was inside of the ball?

A. No; I don't remember now exactly where I have seen one where the ball worked over the socket.

Q. 21. Ordinarily, how does a ball-and-socket joint operate, and how are the ball and socket held together?

A. They are held together in various ways.

Q. 22. Name some of them.

A. They are held together as in Exhibit B B; they are held together as in Exhibit I and as in Exhibit M.

Q. 23. In the respondents' machine do you find a ball-and-socket joint?

A. Yes, sir.

Q. 24. Did you ever see a pivoted ball-and-socket joint?

A. Yes, sir.

Q. 25. When?

A. I see it used there (in Exhibit L).

Q. 26. Did you ever see one before that?

579 A. Well, I have seen a similar joint called the rule joint.

Q. 27. Is that joint in Exhibit L a ball-and-socket joint or a knuckle joint?

A. Yes; it is a portion of a ball held together with a pivot.

Q. 28. Is not that joint known as a knuckle joint in mechanics?

A. Not that I know of.

Q. 29. Are you a practical mechanic?

A. Yes; I have worked in mechanics some.

Q. 30. Have you ever studied mechanics theoretically?

A. No, sir.

Q. 31. What is the difference between a knuckle joint and a ball-and-socket joint?

A. Well, I don't think there is but very little difference betwixt them; they are one and the same thing.

Q. 32. They are known in mechanics as being different things, are they not?

A. I believe they are.

Q. 33. Don't you know what the difference is?

A. Of course, there is a slight difference betwixt them.

Q. 34. Well, what is the difference?

A. Well, I don't know as I can describe the difference between a knuckle joint and a ball-and-socket joint.

580 Q. 35. You spoke of a rule joint. Is not that a knuckle joint?

A. A rule joint, I presume, is a species of a knuckle joint.

Q. 36. You were not the first man to invent a hydraulic machine, were you?

A. No, sir.

Q. 37. You found hydraulic mechanics in existence when you commenced experimenting in that line?

A. Yes, sir.

Q. 38. Do you know the Allenwood machine represented by Exhibit J in the case of Fisher *vs.* Craig?

A. Yes, sir.

Q. 39. How long have you known of that machine represented by Exhibit J before you commenced experimenting in hydraulic machines?

A. I don't know; maybe a couple of years.

Q. 40. Had you ever seen the Allenwood machine at work prior to your invention?

A. No, sir; I had never seen the machine. I have seen it work since.

Q. 41. *Why* do you mean by saying that you knew of the Allenwood machine when you commenced experimenting?

A. I had made some of the couplings for it. I don't know 581 but what prior to my invention I saw the Allenwood machine work. I wouldn't say in regard to that. It is so long ago that I don't remember.

Q. 42. At any rate, prior to your invention you were familiar with the mode of operation of the Allenwood machine?

A. Yes, sir; I was familiar with its mode of operation.

Q. 43. What is the mode of operation of the Allenwood machine?

A. The mode of operation of the Allenwood machine is to conduct the water from a tank down into this lower pipe, let it through——

Q. 44 (interrupting). Well, it is intended to have a horizontal and vertical motion, is it not?

A. It has a horizontal and universal motion.

Q. 45. Does it not have a vertical motion?

A. Certainly it has a vertical motion.

Q. 46. The lower joint in the Allenwood machine you would call a swivel joint, would you not?

A. Yes, sir.

Q. 47. By means of that you can get a horizontal motion?

A. Yes, sir.

Q. 48. And then on account of the flexible sleeve shown 582 on Exhibit J you can get a vertical motion, can you not?

A. By using in that place any ordinary piece of hose you can get a vertical motion.

Q. 49. By means of the lower joint in your machine you can give yourself a horizontal motion?

A. Yes, sir.

Q. 50. Your machine, then, has two motions—horizontal and vertical?

A. Yes, sir.

Q. 51. Both those motions are in the Allenwood machine, are they not?

A. Yes, sir.

Q. 52. Now compare Exhibit J and Exhibit B B. What is the difference between the two in their mode of operation and the results accomplished?

A. The difference between the two is that in this machine, Exhibit B B, the discharge pipe has a vertical motion up and down and stands by itself without whirling around or kinking up, while the other machine won't.

Q. 53. Instead of the flexible section or joint shown in the Allenwood machine you have what you call the ball-and-socket joint?

A. Yes, sir.

Q. 54. And the object of that joint is to produce the same results as are produced by this flexible joint in the Allenwood ma-
583 chine, is it not?

A. It produces the same results and a little more.

Q. 55. You claim that it produces the same result in a better way; that is your proposition, is it not?

A. Yes, sir; it produces the same result in a better way; it don't produce all the results as in the Allenwood machine; it ain't necessary.

Q. 56. Take the respondents' machine, represented by the model Exhibit L, and state how many motions that has.

A. It has two.

Q. 57. It has the horizontal motion, produced by the lower joint or swivel joint, and it has the vertical motion, produced by means of the ball-and-socket joint?

A. Yes, sir.

Q. 58. What is the difference in the motions of those three machines—that is to say, all three of the machines represented by Exhibits B B, J, and L have those two motions, have they not?

A. They all three have those two motions.

Q. 59. Your machine has a different sort of a joint connection of the nozzle with the upper section from the connection of the nozzle with the upper section in Exhibit J, has it not?

584 A. The joint in the Allenwood is not a joint; it is a piece of hose.

Q. 60. Don't you consider it a joint?

A. No, sir; I consider it a piece of hose.

Q. 61. What office does it perform in that machine?

A. It performs the office of giving the elevation and depression a sideways motion—a horizontal and vertical.

Q. 62. That piece of hose connecting the discharge pipe with the upper section performs the same office as that performed by what you term your ball-and-socket joint?

A. To a certain extent it does; it will if a man stands there and holds it.

Q. 63. The same thing is performed by the respondents' machine by reason of the two joints?

A. Yes, sir.

Q. 64. Did you know anything about the Richards machine before you made your invention?

A. No, sir.

Q. 65. You had never seen one of those?

A. No, sir; I have seen them since.

Q. 66. Had you ever heard anything about them?

A. No, sir; I never heard of or saw one before I made my invention.

585 Q. 67. Describe the operation of that Richards machine from the model put in evidence in the case of Fisher *vs.* Craig.

A. It has two universal joints.

Q. 68. Do you say that there are two universal joints there?

A. Yes, sir.

Q. 69. What do you mean by universal joints?

A. They swing the whole sweep of a circle.

Q. 70. Those are circular joints, are they not?

A. Yes; I mean a circular joint.

Q. 71. Two circular joints in the Richards machine make an universal joint?

A. Yes, sir.

Q. 72. When it is is position for operation does not one of those joints give it a horizontal motion and the other a vertical motion?

A. Yes, sir; one gives it a horizontal and the other a vertical motion; of course, with a swivel-joint it will give a horizontal motion, because it has a sweep of a circle.

Q. 73. What is the difference in the mode of operation of your machine and the Richards machine?

A. The difference is that my machine stands where you set it and it has only a certain operation of the elevation, while this Richards machine has the swing of a circle, and the operation of
586 this Richards machine, as it is constructed, has a tendency to swing round.

Q. 74. But, so far as the two joints are concerned, in giving it a horizontal and vertical motion does it perform exactly the same office as your machine?

A. Yes; the two joints will give the same motion.

Q. 75. The joints in the Richards machine which connects the discharge pipe with the upper curved section is different from the joint which connects the discharge pipe with the upper curved section in your machine, is it not?

A. Yes, sir.

Q. 76. What is the difference?

A. It is a swivel joint in the Richards machine and mine is a ball-and-socket joint.

Q. 77. The joint just spoken of you have continued to call in your machine a ball-and-socket joint. Describe the difference between the ball-and-socket joint used in your machine and the ball-and-socket joint used in the respondents' machine?

A. The difference is, betwixt those two machines, the ball is on the end of my discharge pipe and the socket is on the end of the elbow, while in his machine the ball is on the upper end of
587 the elbow and the socket is on the discharge pipe.

Q. 78. Don't you find in the respondents' machine a ball which forms a part of the joint?

A. Yes, sir.

Q. 79. It is a round, spherical ball, is it not?

A. No; a part of the inside face is off of it, or else the water could not get through.

Q. 80. In appearance it is a round, spherical ball, is it not?

A. It is only part of a ball.

Q. 81. It is a round sphere, is it not?

A. Yes.

Q. 82. Where is the socket in the respondents' machine?

A. It sets over the ball.

Q. 83. Which part do you call the socket? There are two pieces shown in the model, Exhibit L. How much of that do you call the socket?

A. The ring and the end of the discharge pipe make a socket.

Q. 84. How is the socket in the respondents' machine fitted on the ball?

A. Sets over the ball.

Q. 85. And the socket, as you call it, is pivoted to the ball, is it not?

A. It is held onto the ball by pivots.

Q. 86. Does the socket touch the ball anywhere in the
588 model of the respondents' machine *machine*, Exhibit L?

A. Yes; I presume it does.

Q. 87. Can't you tell whether it does or not?

A. I know, as a matter of course, they are made to fit the ball.

Q. 88. Don't you know whether they are made to touch?

A. Well, I suppose they are intended to touch the ball, to get down to it, but not so tight but what the socket will work over the ball.

Q. 89. Tell me what part of the socket touches the ball in the respondents' machine.

A. The ring of the socket touches the ball.

Q. 90. You mean the ring below the annular valve, represented by the piece of packing on Exhibit L?

A. Yes, sir; the ring and the packing touch the ball.

Q. 91. In the respondents' machine do you think there would be a water-tight ball and socket there without the packing?

A. That would depend upon the closeness with which it was built. If it fit tight enough it would be water-tight.

Q. 92. Did you ever see one made where there was no packing?

A. I have never seen one made that way—without any packing.

589 Q. 93. What is the object of the packing?

A. To keep the water in.

Q. 94. To make it a water-tight joint, is it not?

A. Yes, sir.

Q. 95. How do you make yours a water-tight joint?

A. The two parts fitting together.

Q. 96. You have no packing, have you?

A. No, sir. Sometimes I have used packing, but there is no packing in my model.

Q. 97. There is no occasion to use packing?

A. No; not in that joint.

Q. 98. Take the model of the respondents' machine, Exhibit L, and examine it now in positton, and say if you find any point where the ring below the packing touches the ball.

A. Not in the model L, but I can show it in the model, Exhibit I.

Q. 99. Exhibit I is a model that you made yourself, is it not?

A. Yes, sir; and Exhibit L is a machine that the defendants made.

Q. 100. Is Exhibit L a correct model of the machine made and sold by the respondents?

A. The main features of the machine is correct but the fitting parts are not correct.

Q. 101. Did you ever see one of the respondents' machines in operation?

590 A. Yes; I have seen them in operation.

Q. 102. In what respect did those that you saw in operation differ from the model, Exhibit L?

A. They fitted tighter on the ball. The socket was made to fit tighter on the ball.

Q. 103. For the purpose of making the ball tight?

A. Yes, sir.

Q. 104. Did the ring touch the ball anywhere?

A. Yes, sir.

Q. 105. Did you examine to see?

A. Yes, sir.

Q. 106. Was there any packing?

A. Yes, sir.

Q. 107. Did you see the packing?

A. Yes, sir.

Q. 108. How could you see it?

A. I could see it—the outer edge of it.

Q. 109. Where it was on the ball?

A. No; I could see it where it was on the ball when it was together.

Q. 110. What you wish to be understood now as testifying is that in the machines of the respondent which you saw the flange touched the ball?

A. Certain portions of it did.

Q. 111. Do you know whether or not it was intended to touch it?

591 A. It was intended to work on the ball—to work just smoothly over the ball.

Q. 112. If the flange or socket, as you call it, rested tightly on the ball what would be the use of having any packing?

A. It is a difficult matter to make the ball and socket fit in all positions.

Q. 113. How is it in your machines?

A. My machine hasn't got quite so many bearing parts as there is on that (Exhibit L).

Q. 114. What do you mean by bearing parts?

A. I consider the ball joint.

Q. 115. In the respondents' machine their having the ball joint gives them more bearing than they have in yours?

A. The bearing is about the same; the cap has about the same bearing on the ball; mine don't have quite the same bearing on the ball as that has, because it works farther over the ball.

Q. 116. Does that make it harder to fit?

A. It is harder to fit it—to make a perfectly tight ball—than it is to make a perfect joint by packing.

Q. 117. Did you ever see one of the respondents' machines that operated without the packing or that would operate without

592 the packing?

A. I don't know that I have ever seen one without the packing in there.

Q. 118. In a joint made like the respondents' that packing becomes necessary, does it not?

A. It is a big advantage; it is not absolutely necessary.

Q. 119. How do you know it is not absolutely necessary?

A. Because from my experience in making ball joints I consider that they are tight without packing.

Q. 120. Did you ever make a ball joint like the respondents'?

A. No, sir; I never made a ball joint like that, exactly.

Q. 121. Then it is a mere surmise that you can make one to fit perfectly water-tight without the packing?

A. Well, no.

Q. 122. Then why do not respondents make them so without packing?

A. It costs more—more expensive.

Q. 113. More expensive to make them fit tight?

A. Yes, sir.

Mr. BOONE:

Q. 124. You could grind the joint to make it fit exactly tight, could you not?

A. Yes, sir.

593 Mr. SCRIVNER:

Q. 125. Do you grind your joints?

A. Yes, sir.

Q. 126. To make them fit exactly?

A. Yes, sir.

Q. 127. There is more surface to grind in theirs, is there not?

A. Yes; they have nearly the whole of a ball, while I have a half of a ball.

Q. 128. Is it not true that what you call the ball in your joint is simply the half of a cylinder?

A. It is more than half of a cylinder; it is a ball.

Q. 129. How much more than half of a cylinder?

A. Almost as much as the ball in Exhibit L is.

Q. 130. Did you ever see a Rice hydraulic machine, represented by Exhibit G?

A. Yes, sir.

Q. 131. Did you ever see one before you made your invention?

A. Yes, sir.

Q. 132. Is the model Exhibit G a correct model of the Rice machine?

A. Substantially correct.

Q. 133. How many motions has that?

594 A. Two.

Q. 134. What are they?

A. Horizontal and vertical motion.

Q. 135. It has two joints, has it not?

A. It has three, sir.

Q. 136. What is the first?

A. The first is a swivel joint.

Q. 137. What is the second?

A. The second and third are two trunnion joints.

Q. 138. The two trunnion joints that you speak of operate as one joint, do they not?

A. Yes; but they are two separate joints.

Q. 139. The result of those that you call trunnion joints is to give the discharge pipe vertical motion, is it not?

A. Yes, sir.

Q. 140. The difference, so far as this part of the machine is concerned, about which we are talking, between the Rice machine and yours, is simply in the character of the joints, is it not?

A. Yes; the difference betwixt the motions of the machines is on account of the character of the different joints.

Q. 141. What is called the swivel joint is substantially the same in each, is it not?

A. It is pretty much the same. The——

595 A. The swivel joint—that horizontal joint.

Q. 142. In lieu of what you call the two trunnions shown in the Rice machine, you use what you call the semi-cylindrical or ball-and-socket joint?

A. Yes, sir.

Q. 143. How do you remove the discharge pipe in your machine?

A. Take the cap off.

Q. 144. How is what you call the semi-cylindrical or ball-and-socket joint in your machine held in the socket?

A. Held there by the ball working in the socket.

Q. 145. In the Richards machine there are two curved sections, are there not?

A. Yes, sir; there are four curved sections in that machine; three represented in the model.

Q. 146. You find two in the model?

A. Yes; I find two, and I find another one, making three.

Q. 147. In the Richards machine those curved sections are connected by swivel joints?

A. Yes, sir.

Q. 148. In your machine you have the two curved sections. One
of them connected together with the swivel joint, the pipe
596 being connected with the upper section by what you call
semi-cylindrical or ball-and-socket joint?

A. Yes, sir.

Q. 149. That is the only substantial difference, so far as that part of the machine is concerned, between yours and the Richards machine.

A. The only difference is that mine is a practically working machine and will stand where you set it, and this Richards machine won't.

Q. 150. Did you ever see one of the Richards machines worked?

A. No, sir.

Q. 151. How do you know that the Richards machine is not a practical machine?

A. By testimony. Yes; I have seen a machine with four elbows or four turns in it work.

Q. 152. Then you took the idea of a double-jointed machine and made a different sort of joint connection between the end of the discharge pipe and the curved section and made it a practical working machine.

A. I took the swivel joint and made a vertical joint, and put the
two together to make a swivel joint and a vertical joint to
597 give the same motion.

Q. 153. In the respondents' machine where is the lever F referred to in the first claim of your patent, Exhibit A A?

A. (Producing a newspaper and pointing to a cut in and advertisement therein). There is the lever F on their machine.

Ex. E E.

(Complainant- puts in evidence the newspaper above referred to, the said cut being in an advertisement appearing upon page 10, marked "Little Giant," said newspaper being a copy of the Mining and Scientific Press, volume 32, number 1, of the date of January 1st, 1876, marked "Complainants' Exhibit E E.")

Q. 154. Take the engraving in Exhibit E E and see if you find a lever like the lever F referred to in your patent and to be found in your model, Exhibit B B?

A. I find a lever like the lever F.

Q. 155. The first claim of your patent, Exhibit A A, contains these words: "Combined as described with the lever F." Now, where is the lever F in the engraving, Exhibit E E?

A. It is the rod running from the end of the nozzle to the
598 upright post on the upper elbow?

Q. 156. In the model of your machine, Exhibit B B, where is the fulcrum of the lever F?

A. It is on the upright post attached to the upper elbow.

Q. 157. Where is the fulcrum of the lever in the engraving in Exhibit E E?

A. It is on this post attached to the upper elbow. It is the same as mine is, only mine does not extend up quite so far.

Q. 158. Where does the lever in the engraving begin and where does it end, or, in other words, which is the lever in the engraving corresponding to your lever F?

A. The lever in the engraving goes from the end of the nozzle to the other lever on the lower section of the bottom elbow, passing over the post on the upper elbow?

Q. 159. How is that lever shown in the engraving in Exhibit E E made?

A. It is made of iron.

Q. 160. One solid piece?

A. No, sir; it is made of two pieces of iron. It is represented in two pieces in the engraving. One piece of the lever in the engraving is represented as a chain.

Q. 161. What is the lever represented in the engraving made of?

599 A. It is made of iron.

Q. 162. Is it a solid piece of iron or is it a piece of iron and a chain, or what is it?

A. There is a portion of it solid and the other portion is a chain.

Q. 163. How is it wound up?

A. Wound up with a ratchet.

Q. 164. It is wound on a cylinder, is it not?

A. Yes; wound up by a crank on a cylinder and held by a ratchet and pawl.

Q. 165. Point out in the engraving what corresponds with the slotted post mentioned in the first claim in Exhibit A A.

A. It is at the end of the nozzle where the lever connects.

Q. 166. Where, in the engraving, is the strap I referred to in claim one in Exhibit A A?

A. It is in this chain part that winds around the cylinder.

Q. 167. But you say that is a part of the lever.

A. I say the lever comes over to where the chain is connected.

Q. 168. Where is the strap I in the engraving?

A. It is this chain, the part that winds up around the cylinder.

600 Q. 169. Is not that a part of the lever?

A. No more than the strap I is in my machine. It is a part of the lever; it helps give the motion to the discharge pipe.

Q. 170. If the lever in the engraving runs from the end of the discharge pipe to the end of the chain——

A. (Interrupting.) It only comes to where the chain goes.

Q. 171. Where does the chain go?

A. It might go one foot or it might go two feet; there is enough chain to wind it up. He substitutes a piece of chain for my strap.

Q. 172. Where, in the engraving, is the lever C referred to in the first claim of your patent, Exhibit A A?

A. It is the operating lever on the upper elbow extending backwards from the nozzle. I will arrange the model I so that it will show the arrangement of the levers shown in the engraving in Exhibit E E.

Q. 173. Where, in the engraving, do you find the pawl and rachet *j k* referred to in the first claim of your patent, Exhibit A A?

A. The pawl and rachet are on the outer end of the lever.

(It is admitted that the model, Exhibit L, introduced in
601 evidence in the *in the* case of Fisher *vs.* Craig, number 1144, is a substantially correct model of the machines made and sold by the respondents since the date of the reissued letters patent, Exhibit A A.

It is agreed that the said model, Exhibit L, shall be taken as answering the requirements of the stipulation heretofore entered into appearing upon page six, *ante.*

It is understood and agreed, however, that neither the above admission nor any previous stipulation or admission shall exclude the complainant- from proving infringement by the respondents of claim one of the patent, Exhibit A A.)

(The witness attaches to Exhibit I leverage arrangement illustrated in the engraving in Exhibit E E.)

Q. 174. Take the model, Exhibit L, and point out the semi-cylindrical or ball-shaped enlargement at the base of the discharge pipe referred to in claim three of your patent, Exhibit A A.

A. Of course the ball shape is on the end of the upper elbow.

Q. 175. In the respondents' machine is there any semi-cylindrical or ball-shaped enlargement at the base of the discharge pipe?

602 A. Yes, sir.

Q. 176. What is it?

A. It is the lower end of the discharge pipe.

Q. 177. The discharge pipe increases in size from the discharging end down to the lower end where it is placed over the ball, does it not?

A. It increases until it gets nearly to the end, and then it increases more rapidly—bulges out over the ball.

Q. 178. Then the semi-cylindrical or ball-shaped enlargement referred to in claim 3 of the patent, Exhibit A A, is represented in the respondents' machine by that increased enlargement at the lower end of the discharge pipe, is it?

A. Yes, sir.

Q. 179. It is that portion of the lower end of the discharge pipe in Exhibit L made of brass?

A. Yes, sir.

Q. 180. Now, show me on the model of the complainants' machine, Exhibit L, the cup-shaped socket corresponding to the cup-shaped socket on the end of the horizontally-swivel*l*ing section B, referred to in claim 3 of your patent, Exhibit A A.

603 A. The cup-shaped socket in Exhibit L is a piece that sets over the ball that the discharge pipe is attached to. The socket is reversed on the model, Exhibit L, from the way it is on mine.

Q. 181. Referring to your third claim in Exhibit A A, which contains the following language: "In combination with a corresponding cup-shaped socket D on the end of the horizontally-swivel*l*ing section B." Taking off the discharge pipe in the model, Exhibit L, show me the cup-shaped socket on the end of the horizonally-swivel*l*ing section in the respondents' machine, as represented by Exhibit L.

A. In the defendants' machine the cup shape is reversed; instead of being on the end of the upper section of the elbow it is on the end of the discharge pipe.

Q. 182. Then, there is no cup-shaped socket on the end of the horizontally-swivel*l*ing section in the respondents' machine, is there?

A. There is the ball on the end.

Q. 183. (Q. 182 repeated.)

A. No; it is reversed.

Q. 184. As a matter of fact, there is no cup-shaped socket on the end of the horizontally-swivel*l*ing section in the respondents' machine, is there?

A. There is not.

604 Q. 185. You say that the cup-shaped socket is on the end of the discharge pipe in the responden*ds*' machine?

A. Yes, sir.

Q. 186. When you speak of the ball-shaped enlargement in claim 3 of your patent, Exhibit A A, you refer to that semi-cylindrical ball or enlargement on the end of the discharge pipe?

A. Yes, sir.

Q. 187. Is there any semi-cylindrical ball or enlargement affixed to the end of the discharge pipe in the respondents' machine that fits into a socket or anything else?

A. There is a cup-shaped enlargement.

Q. 188. Does it fit on the inside or outside of the ball?

A. It fits on the outside of the ball.

Q. 189. This ball-shaped enlargement referred to in your third claim fits inside of the swivel*l*ing section B in your machine?

A. Fits in the cup of the swivel*l*ing section.

Q. 190. There is no such enlargement fitting inside of a cup or anything else in the responden*d*ts' machine, is there?

A. No.

Q. 191. Is there any cup there, in the respondents' machine, into which it fits?

A. No; there is a ball over which the end of the cup-shaped nozzle fits.

605 Q. 192. How does the pressure of the water act on the joint connecting the discharge pipe and the upper curved section in your machine?

A. The pressure of the water holds the joint of my machine together; the pressure that comes on it makes it tight.

Q. 193. How is it with the respondents' machine?

A. It is the same way; when the pressure of the water comes on it holds it tight.

Q. 194. Would not the respondents' machine come apart when the water was applied if it was not held together by those pivots?

A. It would if it wasn't held together, and so would mine if it wasn't held together; take my screws out and it will come apart.

Q. 195. I am speaking of the joint proper.

A. Certainly it would come apart if the screws were taken out.

Redirect examination of FRANK H. FISHER by MR. BOONE:

Q. 1. Were you the complainant in the case of Fisher *vs.* Craig, number 1144, tried in this court some year- ago?

A. Yes, sir.

606 Q. 2. Was the patent sued on in that case the same patent as the one upon which the present suit is based, Exhibit A A?

A. It was not; it was the patent of which A A is a reissue.

Q. 7. Which one of these issues cited is the title of the patent, Exhibit A A, was that suit commenced under?

A. It was the reissue number 5193, dated December 17, 1872.

Q. 4. Did the result of that suit convince you that your patent was inoperative as it then stood?

A. It did.

Q. 5. What was the reason of your taking out the present reissue?

A. The reason was in order to remedy the defect in the other patent.

Q. 6. Now, state, Mr. Fisher, in a few words, the difference, if any, existing between the upper joint represented in your patent and the one represented in the model, Exhibit L.

A. The only difference is that the ball is on the end of the upper section of the joint in the defendants' machine, while in mine it is on the end of the discharge pipe; the ball in their machine is the reverse of mine.

Q. 7. Then the upper joint in each machine consists of a ball fitting into a corresponding socket?

607 A. Yes, sir.

Q. 8. And the only difference is that in the two machines the ball and socket are reversed?

A. Yes, sir.

Q. 9. Do they operate in substantially the same way?

A. Exactly.

Q. 10. Do they produce the same result?

A. Exactly the same result.

Q. 11. What is the object of the packing used in the respondents' machine around the ball, Mr. Fisher?

A. It is to make it water-tight, and it is a cheaper way of manufacturing the machine.

Q. 12. When either of these machines is in operation is there any water pressure in the discharge pipe?

A. Yes, sir.

Q. 13. Then it is necessary that the joint should be kept on, in order to prevent the water from flowing out?

A. Yes, sir; it must be a close-fitting joint.

Q 14. Do you use any packing in your joint?

A. I have used a machine with packing in it, but not as I manufacture them. I don't use it in the upper joint; in the swivel joint we use packing.

608 Q. 15. Is there anything in the adjustment of the two parts of the joint which requires packing, necessarily, in his machine not in yours?

A. No, not if they would take the same amount of work to grind the joints together.

Q. 16. In Exhibit J, representing the Allenwood machine, what peculiarity is there in the upper joint which makes it different from the joint represented in your patent and in the respondents' machine?

A. The upper, flexible part in Exhibit J, I don't consider a joint.

The canvas section is something that don't stay in its place, and it is liable to swing round and kink up—liable to accident.

Q. 17. Would a very short piece of canvas hose be operative if used to connect the section with the discharge pipe?

A. No; a very short piece would not be.

Q. 18. It is necessary that it should be a long piece, then, is it?

A. A long piece—two or two and a half feet long.

Q. 19. Why?

A. In order to give it a flexible motion.

Q. 20. If it was a short piece what would happen?

A. You couldn't get any motion; it would be rigid.

Q. 21. Would the nozzle of the Allenwood machine remain
609 in any position in *in* which it was placed while it worked?

A. It would while it was at work if it was placed in position. If it was placed in one position it would set there while it was at work on account of the pressure of the water on it, but in order to make a depression you would have to take hold of the pipe and pull it down.

Q. 22. Would it remain in that position if it was pulled down?

A. No, sir; it would fly up.

Q. 23. It would have a tendency to fly straight all the time, would it?

A. Yes, sir.

Q. 24. Do you find that to be the case with the metal joint in your machine?

A. No, sir.

Q. 25. Is it a desirable point in the operation of hydraulic machines that the nozzle should remain in the elevated or depressed position in which it is placed?

A. It is very essential.

Q. 26. In your cross-examination you say that the Richards machine was not a practical working machine?

A. I said it was not a practical working machine.

Q. 27. What difference is there between the machine repre-
610 sented in your patent and Richards' machine which makes
yours a practical machine while his is not?

A. The mechanical construction of the two machines is different. The Richards machine has a tendency to fly around in a circle.

Q. 28. What feature in your machine is it which remedies that difficulty?

A. The vertical ball-and-socket joint.

Q. 29. Then by substituting that vertical-moving ball-and-socket joint for the swivel joint in the Richards machine you remedied the difficulty, did you, and made a practical working machine?

A. I did. I knew nothing about the Richards machine when I made my machine.

Q. 30. Do you know, Mr. Fisher, whether or not the ball-and-socket joint has been adapted to any great extent in hydraulic machines since the issue of your original patent?

A. It has, in one or two cases.

Q. 31. Do you know of any operative machines in use since that time which do not have the ball-and-socket joint for the front joint connecting the discharge pipe with the swivel*l*ing section?

A. No, sir; I don't think there is any.

611 Recross-examination of FRANK H. FISHER by Mr. SCRIVNER:

Q. 1. Do you know anything about the Craig machine?

A. I know Craig did have a Globe machine.

Q. 2. Did it not have a ball-and-socket joint connecting the discharge pipe with the upper curved section?

A. Yes, sir; but it had only one joint.

Q. 3. It had a ball-and-socket joint connecting the discharge pipe with the curved section?

A. Yes, sir.

Q. 4. That, you say, was a single-jointed machine?

A. Yes, sir.

Q. 5. This Craig machine was in existence when you made your invention, was it not?

A. Yes, sir.

Q. 6. Did you know before your invention of any other sort of hydraulic machine where there was a ball-and-socket joint connecting the discharge pipe with the lower part of the machine?

A. No, sir.

Complainant- rests.

(Continued until to-morrow, 6 instant, at 11 o'clock a. m.)

612 SATURDAY, *November* 6, 1880.

Present: Mr. Boone, of counsel for complainant-; Mr. Scrivner, of counsel for respondent-.

Deposition of Mr. Farmhals.

Examination-in-chief of FERDINAND FARMHALS (a witness on behalf of respondent-) by Mr. SCRIVNER:

Q. 1. What is your business?

A. I am a mechanic.

Q. 2. How long have you been a mechanic?

A. About thirty years.

Q. 3. Take Exhibit B B and say whether or not you find a ball-and-socket joint in that exhibit.

A. (After examination.) No, sir.

Q. 4. What sort of joint would you call the joint connecting the discharge pipe with the curved section in Exhibit B B?

A. That is a sort of a faucet joint; it is not a ball-and-socket joint; it is a sort of circular joint or cylindrical joint.

Q. 5. Take Exhibit L and state what sort of joint that is connecting the discharge pipe with the curved section.

A. That I would call a ball-and-socket joint.

613 Q. 6. You find a ball there attached to the curved section, do you?

A. Yes, sir.

Q. 7. Describe generally the difference between the two joints to which your attention has been called in Exhibit- L and B B.

A. The joint in Exhibit L is a joint made by a ball made tight with a leather flange or packing in the socket. This joint is made tight by the pressure of the water on the leather, and the other one in Exhibit B B is simply two metal surfaces.

Q. 8. Take the model, Exhibit J, representing what is called the Allenwood machine, and state whether or not, in your judgment, the flexible canvas section in that machine would be considered a joint in mechanics.

A. I don't consider this a mechanical joint; it is a flexible joint. It is simply a flexible section; it is not a joint in the true meaning.

Q. 9. In Exhibit L, if the pivots were removed, what would be the effect of the pressure of the water?

A. It would push off the discharge pipe.

Q. 10. Did you ever see one of the Little Giant machines in operation?

A. Yes, sir.

614 Q. 11. Was the discharge pipe fitted closely onto the ball?

A. No, sir; it was very loose. When the pressure is not on it is loose, and the moment the pressure of the water is applied it becomes rigid.

Q. 12. The packing is necessary, then, to make it a water-tight joint?

A. Yes, sir.

Q. 13. Did you ever see one of the Fisher machines in operation?

A. No, sir.

Cross-examination of FERDINAND FARMHALS by Mr. BOONE:

Q. 1. Are you a practical miner?

A. I have mined considerable.

Q. 2. Hydraulic mining?

A. Yes, sir.

Q. 3. Did you ever handle one of these hydraulic machines?

A. Yes, sir.

Q. 4. Have you ever handled the Little Giant machine?

A. I don't really know by what name the machines went; it is this machine represented by Exhibit L.

615 Q. 5. When was that?

A. Well, within the last four or five years, off and on. I have rigged up a number of hydraulic mines myself.

Q. 6. Where?

A. At Rocklin, Iowa Hill, and other places.

Q. 7. What mine at Rocklin?

A. One mine called the Ladd mine.

Q. 8. Any other?

A. That is the only one at Rocklin; at Iowa Hill I rigged up a mine called the Independence.

Q. 9. Was there any other mine that you rigged up.

A. I rigged up the Jupiter, in Calaveras county.

Q. 10. What sort of hydraulic machines were used at those mines?

A. Well, this style (referring to Exhibit L).

Q. 11. The Craig machines?

A. Yes, sir.

Q. 12. When was it that you rigged up the mine at Iowa Hill?

A. I can't tell the date exactly; it was a little over two years ago. I worked two seasons with it.

Q. 13. When was it that you rigged up the mine at Rocklin?

616 A. I think about two years next spring; a little less than two years; I can't recollect the date exactly.

Q. 14. When was it that you rigged up the mine in Calaveras county?

A. A year ago last summer; about a year and three months; thereabouts; I can't say absolutely as to these dates.

Q. 15. Were the machines which you used or put up exactly in construction like Exhibit L.

A. Of course, this (Exhibit L) is only a model, and they were cast iron, but the construction was like that.

Q. 16. Were the fittings substantially like those represented in the model, Exhibit L?

A. So far as the character of the joints are concerned, yes.

Q. 17. What was the tightness of the upper joint as compared with that of Exhibit L?

A. Something like that when not in use.

Q. 18. The joint was tight between the ball and socket, was it?

A. No, sir.

Q. 19. Did any water pass out through when the machine was in use?

A. When the machine was in use there was no water passing out.

Q. 20. What made it tight?

617 A. The pressure of the water or the packing against the ball.

Q. 21. What is your idea, Mr. Farmhals, of a ball-and-socket joint?

A. In what regard?

Q. 22. As to its construction.

A. A ball-and-socket joint is used generally to obtain a freer motion in a joint.

Q. 23. Ball-and-socket joints are variously constructed, are they not?

A. They are variously constructed, but just the principle is all the same.

Q. 24. Would you call any joint where there was an enlargement working in a corresponding socket a ball-and-socket joint?

A. Well, no; the socket we always understand is a cavity that slopes from all sides to a center.

Q. 25. Is there any particular shape necessary in the socket in order to constitute it a part of the joint?

A. To form a ball-and-socket joint it is always necessary that there should be a cavity——

Q. 26 (interrupting). And a corresponding enlargement?

A. And a corresponding enlargement.

Q. 27. So long as the cavity and enlargement fit each other, then it would be a ball-and-socket joint, would it not?

618 A. No, sir; it would not.

Q. 28. What would it be, then?

A. I don't know that you could make a joint unless they would fit each other.

Q. 29. If there were two parts of a joint, one of which was an enlarged and the other was a socket, in which the enlargement fitted, would you not call that a ball-and-socket joint?

A. No; unless it was in globular shape.

Q. 30. Then you contend that where there was an enlargement and a socket into which it fitted, unless the enlargement was a globe, it would not be a ball-and-socket joint?

A. No, sir; it wouldn't be so considered.

Q. 31. Take Exhibit L in your hand and tell me how many motions that upper joint has.

A. That has but one motion.

Q. 32. What motion is that?

A. It is an up-and-down—that is, that one of the joints connecting the discharge pipe with the upper section.

Q. 33. Is it necessary that that joint should have any more motions than that one motion?

A. No, sir.

Q. 34. The only object, then, of that joint is to get the up-and-down motion, is it?

A. It is to get the up-and-down motion and also keep a tight joint.

619 Q. 35. That joint has a ball-shaped enlargement, has it?

A. Yes, sir.

Q. 36. Fitting into a correspondingly shaped socket?

A. Yes, sir.

Q. 37. It had trunnions on each side of it upon which the socket portion works over the ball?

A. Yes; to keep them together.

Q. 38. Take the model, Exhibit B B, and you find there an enlargement, do you not, fitting into a corresponding socket?

A. No; I don't see an enlargement there, particularly.

Q. 39. Don't you find an enlargement on the end of the discharge pipe on that machine?

A. On the end of the discharge pipe there is an enlargement.

Q. 40. That enlargement fits in the corresponding socket in the upper end of the section, does it not?

A. Yes, sir.

Q. 41. What motion has that joint?

A. One, up-and-down.

Q. 42. The same as the motion in the "Little Giant" machine?

A. Yes, sir.

Q. 43. Has it got bearings on each side the same as the pivot bearing on the Little Giant machine? 620

A. Bearings on each side.

Q. 44. Tell me what the round shape of the ball in Exhibit L accomplishes more than this cylindrical-shaped joint in the Fisher machine. What more does it accomplish than this Fisher joint does by being cylindrical?

A. It accomplishes the same thing, only there being corners and angular place, the Fisher joint wouldn't be apt to be as tight as the other one.

Q. 45. They both produce the same result, do they?

A. They both produce the same result.

Q. 46. In substantially the same way?

A. In substantially the same way.

Q. 47. Would you not call this upper joint in Exhibit L a mechanical equivalent of the upper joint in Exhibit B B, so far as the work they have got to do is concerned—that is, to give the up-and-down motion?

A. Yes, sir; both joints are intended to do the same thing.

Q. 48. They are both metal joints, are they?

A. This Fisher joint is a metal joint, while the other is a packing joint.

Q. 49. The ball and socket are in both cases made out of metal?

A. Yes, sir; but in this case (referring to Exhibit L) there
621 wouldn't be a joint without the packing.

Q. 50. The packing is merely for the purpose of making tight between metal surfaces that are not ground together, is it not?

A. The packing being elastic around the metal the action of the water discharged through those pipes is such that I don't think the metal alone would stand it to be water-tight.

Q. 51. You could grind the ball so as to make a tight joint without packing, could you not?

A. Yes, sir.

Q. 52. There is always a pressure of water in the discharge pipe when these machines are at work, and that pressure throws that part of the joint back, which would tend to make it leak?

A. Yes, sir.

Q. 53. Is not that packing used because of the fact that the packing can be easily renewed while the metal parts of the joint, if first fitted by grinding, would wear by working together; is not that the fact?

A. The way this joint in the Little Giant machine is you couldn't hardly make it tight, even with grinding, because, the pressure being
so great, if this was simply metal it would force the joint
622 apart. This joint the pressure would have a tendency to force
apart, while in this Fisher joint the tendency of the pressure would be to keep them together, and if there is any gravel or sand, as is usually the case, this Fisher machine, standing as it does now, the tendency of the gravel would be to grind it, while in an elastic joint a little stone coming between it wouldn't have a bad effect.

Q. 54. It is usual to pack joints where they are liable to wear, in mechanics, is it not?

A. Yes, sir.

Q. 55. There is nothing new about that?

A. No, sir.

Q. 56. Which of those two joints referred to has a larger joint surface, moving parts, in contact?

A. This (Exhibit B B) has the largest surface to work on. It is just as a round is to a square. It is about the difference of seventy-eight and one hundred. That is one reason that this joint would work easier than this one (in Exhibit B B) under pressure.

Q. 57. Wouldn't the fact that the socket in Exhibit L is on the end of the discharge pipe and fitting on the outside of the ball make it work easier than if the socket were on the end of the curved section and the ball was on the end of the discharge pipe?

623 A. It would make no difference whatever; the same pressure would be there then as there is here, all the same. The pressure acts in every direction alike; it makes no difference.

Q. 58. Would not the pressure in that case tend to force the joint together rather than force it apart?

A. No, sir; because it is always held on those pivots, and if you take that right off and reverse it it would be just the same—the same action.

Q. 59. How would it be in the case of the upper joint on Exhibit B B if that was reversed?

A. In that case there would be some little difficulty to reverse it.

Q. 60. What would be the effect of the pressure on the join if it was reversed in the same way?

A. In the first place, you see, to reverse that you would have to have the discharge pipe as big as the elbow.

Q. 61. Is it not so in Exhibit L?

A. No; it wouldn't be necessary in that case.

Q. 62. Is it not so, I say, in Exhibit L, that the end of the discharge pipe is large enough to fit over the ball on the end of the curved section?

A. Yes, sir.

Q. 63. Then, if you were to reverse the arrangement of the
624 upper joint on Exhibit B B and make the rear end of the
discharge pipe large enough to fit the ball on the end of the section, then what would be the difference in the action of the pressure of the water on those two joints?

A. To reverse that on Exhibit B B you would have to make the discharge pipe as big as the present elbow is, which would bring it very much out of proportion.

Q. 64. I ask you again, is it not a fact that in Exhibit L, the respondents' machine, the rear end of the discharge pipe is made large enough to fit over the enlargement on the outer end of the curved section?

A. Yes, sir.

Q. 65. Now, I say, supposing that in Exhibit B B the same thing was done—the joint was so reversed—what would be the difference in the action of the pressure of the water upon those two joints? I am not asking you how it could be done or how practical it would be or how it would look, but what would be the effect of the pressure of the water if it was done.

A. It would be the same thing as in the other case, because it makes no difference; the pressure is always the same in every portion.

Q. 66. Then, I will ask, you do not consider the joint re-
625 ferred to represented in Exhibit L as a mechanical equivalent of the joint referred to represented in Exhibit B B?

A. It is a mechanical equivalent.

Redirect examination of FERDINAND FARMHALS by Mr. SCRIVNER:

Q 1. Could you put such an enlargement on the end of the top curved section of Exhibit B B as is shown on the end of the discharge pipe in Exhibit B B?

A. It certainly could be done, but it would be a very cumbersome thing. It would interfere with the discharge of the water, because the elbow would have to be so large to allow of the discharge of the water throughit that—would be objectionable for the current of the water to pass through.

Q. 2. Look at Exhibit J, being a model of the Allenwood machine, and state how many motions that has as a machine?

A. That has but one motion, with the addition of the motion given by the flexible section.

626 Q. 3. What motion would that flexible section give?

A. That would give a universal motion.

Q. 4. It would give a universal motion?

A. Yes, sir.

Q. 5. Then that machine would have a horizontal and vertical motion?

A. Yes, sir.

Q. 6. The lower swivel joint would give it a horizontal motion alone?

A. Yes, sir.

Q. 7. And the flexible section that you speak of would give the discharge pipe a vertical motion also?

A. Yes, sir.

Q. 8. That is what is done by the metal joints in the machine represented by Exhibit B B, is it not?

A. Yes, sir.

Q. 9. Then the machine represented by Exhibit B B in that respect performs the same functions that the machine represented by Exhibit J does?

A. Yes, sir.

Q. 10. Then if the joint represented in Exhibit L is, as you say, a mechanical equivalent of that in Exhibit B B, would they not both be mechanical equivalents of the joint used in Exhibit J?

627 A. They would.

Q. 11. Substantially the same relations exist between the three machines?

A. Substantially the same.

Q. 12. That is to say, that they all have the horizontal and vertical motion?

A. Yes, sir.

Q. 13. Look at the model of the Richards machine and state what motion that has.

A. That has the same motion too. It has got the horizontal and vertical motions.

Q. 14. Then, so far as the joints are concerned, these four machines are equivalents of each other, are they not?

A. Yes, sir.

Q. 15. They all have the curved sections; they have the horizontal and vertical motions, and they have two joints?

A. Yes, sir; but with that exception—that this Richards machine would not be likely to stand still—it would be revolving the moment the water was turned on.

Q. 16. Could you not so fix it in position that it would not revolve?

A. It wouldn't stand; it couldn't be set to any point where it would remain stationary.

628 Q. 17. Could not the discharge pipe be so lengthened out as to prevent that whirling motion?

A. If that was lengthened out so that it would stand, it would be simply a matter of weight to counterbalance the force of the water by weight.

Recross-examination of Ferdinand Farmhals by Mr. Boone:

Q. 1. Now, Mr. Farmhals, in Exhibit L is not the upper curved section made gradually smaller from its base towards its forward end?

A. Yes, sir.

Q. 2. Is that the case in Exhibit B B?

A. It is not.

Q. 3. Now, suppose that the curved section in Exhibit B B were made gradually smaller, as represented in Exhibit L, and the joint were reversed and put together in the same way as it is in Exhibit L, what would be the difference between the two machines?

A. The difference would simply be that this in Exhibit L is a ball-and-socket joint and this in Exhibit B B is a semi-cylindrical joint.

629 Q. 4. Would not the proportions of the two machines be the same?

A. No, sir. In Exhibit B B the joint would always be larger and more abrupt.

Q. 5. But with that exception they would be the same, would they not?

A. They would be the same; yes.

Q. 6. Then it would be merely a question of proportions in the construction of the two machines?

A. Well, it is a question of proportions.

Mr. Scrivner:

Q. 7. Of construction?

A. Of construction; the construction would be the same.

Mr. Boone:

Q. 8. Now, I will ask you whether you ever used or saw used a machine similar to that represented by Exhibit J?

A. I have not. I saw hose used, of course, so far as that is concerned.

Q. 9. As a mechanic and as a person familiar with hydraulic mining, which of those two joints—the canvas section or the metal joint—represented in Exhibit- B B and L would you consider to be the best adapted for hydraulic machinery?

A. I should consider this (in Exhibit L) the best adapted on account of its being easy working, having less bearing than this joint (in Exhibit B B).

630 Q. 70. I am asking you to compare the canvas joint in Exhibit J with the metal joints in Exhibit- B B and L.

A. The metal joints would — the best adapted for hydraulic mining machines.

Q. 11. And of the two metal joints you would consider that this ball joint shown in Exhibit L would be preferable?

A. Yes, sir; I would consider that preferable to that (in Exhibit B B).

Q. 12. You say you never saw a machine constructed like Exhibit J worked?

A. No, sir.

Q. 13. If you should find that a machine constructed like that was in the habit of bucking, and that a machine made like Exhibit B B was not in the habit of bucking, then would you consider that the joint in Exhibit B B made that a better machine than that represented by Exhibit J?

A. I consider this (Exhibit B B) the best machine.

Q. 14. What class of joints would you consider preferable for a hydraulic mining machine—that represented by Exhibit L or that represented by the model of the Richards machine?

A. As I said before, the Richards machine would not do at all—on a large machine.

631 Redirect examination of Ferdinand Farmhals by Mr. Scrivner:

Q. 1. Do you know anything about the Rice machine?

A. No, sir.

Q. 2. Look at Exhibit F and state how many motions that has and how many joints?

A. It has two motions and two joints.

Q. 3. What are the motions?

A. Horizontal and perpendicular.

Q. 4. What are the joints?

A. One is what we call a flange and the other would be a sort of faucet joint.

Q. 5. You say a machine represented by the model, Exhibit F, would have a horizontal motion because of the swivelling joint connecting the two sections, and one a vertical motion by reason of the joint connecting the discharge pipe with the upper section?

A. Yes, sir.

Q. 6. Now, in your judgment, are not Exhibit B B and Exhibit L, so far as these motions are concerned, simply mechanical equivalents of Exhibit F?

632 A. Yes, sir; these motions, of course, are the same. I suppose in this (Exhibit F) it is intended to bring the water from both sides into the nozzle.

Q. 7. They are evidently used to subserve the same purpose, to give the machine a horizontal and vertical motion?

A. Yes, sir.

Recross-examination of FERDINAND FARMHALS by Mr. BOONE:

Q. 1. If it was shown to your satisfaction that a machine constructed after the manner of the model, Exhibit F, was not a practical machine, could not be used in hydraulic mining, would you then consider the joints in that machine a mechanical equivalent of the joints represented by Exhibit- B B and L?

A. When you come to the nicety of an equivalent then I would say that this (Exhibit F) is not an equivalent to that (Exhibit B B), because that would not give the same force to the water.

Mr. SCRIVNER:

Q. 2. You mean that the machines are not equivalent to each other?

633 A. Yes; so far as the machines are concerned, they would all be equivalents of each other, but when you come to the execution, whether this (Exhibit F) would be an equivalent of this (Exhibit B B), that is a different thing.

Mr. BOONE:

Q. 3. Is it not a fact that those two motions are obtained in a common Hose?

A. Certainly they are.

Q. 4. And, so far as that is concerned, the common Hose would be the equivalent of all of these, would it not?

A. Yes, sir; as regards motion.

Q. 5. Then it resolves itself into the question as to which is a practical machine, does it not?

A. Yes, sir.

Q. 6. Now, if it is shown that one of these systems of joints forms a practical hydraulic machine, then you would not call that the mechanical equivalent of a machine which is not a practical working machine?

A. I would still call it an equivalent, so far as the motions are concerned, but as to practice I would not call it an equivalent.

Q. 7. Because they do not produce the same result?

A. Because they do not produce the same result.

Q. 8. How many moving joints do you say you find in that machine represented by Exhibit F?

634 A. There is two.

Q. 9. Do you not call these moving faces of metal on each side of the discharge pipe a joint?

A. I call them a joint.

Q. 10. Are there not two of those—one on each side of the discharge pipe?

A. There are two joints for the purpose of obtaining one motion. This machine (Exhibit F) would have a good deal more surface to bear upon and wear out than any of those other machines.

Q. 11. Then Exhibit F practically has three joints to be kept tight, has it?

A. Yes; it has three joints to be kept tight.

Mr. Scrivner:

Q. 12. In Exhibit B B is not the same thing true—that is to say, if there are two joints to be kept tight in Exhibit F does not the same thing occur in B B, where the semi-cylindrical enlargement is connected with the upper curved section?

A. No; there are only two faces—two faces are necessary to give one joint—and in this case (Exhibit F) there are three—in fact there are four faces.

635 Q. 13. The square ends of this semi-cylindrical enlargement on Exhibit B B are connected with the surface of the upper section?

A. Yes, sir.

Q. 14. Does not that make two connections, one on each end?

A. No, sir; there is only one connection. There are two surfaces.

Q. 15. There are two surfaces on each end of the semi-cylindrical enlargement?

A. Yes, sir.

Q. 16. Does not the same thing appear in Exhibit F?

A. No. In Exhibit F there are four faces to be brought together to make one joint.

Mr. Boone:

Q. 17. How many methods are commonly used by machinists for making water-tight joints between metal faces?

A. There is a good many ways to secure them, but there is generally but two methods or two classes of joints. One is a ground joint—that is, grinding two faces together truly and the other is to place some packing between two faces.

Q. 18. Those are common methods, are they, of making water-tight joints?

A. Common methods, either by cement or packing or by grinding the two faces.

Mr. Scrivner:

Q. 19. Both methods of making these joints water tight—that is, the complainants' and respondents'—are old?

636 A. Yes, sir.

Q. 20. That is, making the metal of each part of the joint fit tightly, as in the complainants' machine, or putting in packing, as in the respondents' machine—both those methods are old?

A. Yes, sir.

Mr. Boone:

Q. 21. Then would you consider it any invention for the respondents to make *his* joint tight by means of packing in that way?

A. I would not consider that method any particular invention, but what I see new in this (Exhibit L) is more particularly the pivots and using packing in the ball-and-socket joint.

Q. 22. Don't you find the equivalent of those pivots in the complainants' machine, Exhibit B B?

A. Yes, sir; the joint being of a different construction, the convex surface acts the same as the pivots do.

Mr. Scrivner:

Q. 23. Did you ever know packing to be used in connection with a ball-and-socket joint in any mechanical structures before the respondents' invention?

A. No, sir.

637 Q. 24. That packing for the purpose of making a ball-and-socket joint is new, so far as you know?

A. Yes, sir.

Q. 25. You never saw or heard of it before you saw it used in this machine of respondents?

A. No.

Deposition of Richard Hoskin.

Examination-in-chief of Richard Hoskin (a witness on behalf of respondents) by Mr. Scrivner:

Q. 1. You are one of the respondents in this suit?

A. I am, sir.

Q. 2. How long have you been familiar with hydraulic mining and the machinery used in hydraulic mining?

A. Seventeen or eighteen years.

Q. 3. What was the first sort of hydraulic machines you ever saw?

A. The first I ever saw was the Allenwood machine represented in Exhibit J.

638 Q. 4. How long ago was it that you first saw that?

A. I don't recollect the date.

Q. 5. As near as you can tell?

A. It was shortly after its first introduction; within a year or two after it was first introduced. If I had the date of the patent I could tell. It was within a year or two of the date of the patent.

Mr. Boone:

Q. 6. How do you know?

A. Because I kept the run. I saw when the patent was granted.

Q. 7. Do you know the date of the patent?

A. No, sir.

Q. 8. How do you know, then, that it was within a year or two of the date of the patent?

A. Because I read of them and saw of their being introduced in certain places, and Allenwood brought one over to Gold Run to introduce it there.

Q. 9. Might it not have been five or six years after the date of the patent?

A. No, sir.

Q. 10. Do you know whether he attempted to introduce his machines within five years after his patent was issued?

A. I don't recollect now.

Q. 11. You don't know, then, whether he did or not?

A. I think he did, though.

639 Q. 12. You don't know that he did?

A. I don't know for certain.

Q. 13. Then it might have been several years after the date of the patent, might it not?

A. Well, it might have been some years after the date of the patent.

Mr. Scrivner:

Q. 14. About how many years after the taking out of the Allenwood patent did you see the Allenwood machine operate?

Obj. (Objected to by respondent- on the ground that the witness has already stated that he does not know.)

(Witness refers to a pocket memorandum book.)

Mr. Boone:

Q. 15. What memorandum are you referring to?

A. I am referring to the date of my patent, by which I can tell.

Q. 16. Are you referring to your patent itself?

A. No.

Q. 17. What memorandum are you referring to?

A. I am referring to the date of the Fisher patent, of which I have a memorandum in my memorandum book. (Witness refers to Fisher patent, Exhibit A A.) I think I first saw the Allenwood machine in about 1868 or 1869.

640 Mr. Scrivner:

Q. 18. Describe the Allenwood machine.

A. It has two joints, one for getting horizontal motion and the other vertical.

Q. 19. The one for getting horizontal motion is what?

A. A swivel metal joint.

Q. 20. The one for getting vertical motion is what?

A. Is a flexible joint.

Q. 21. Made of what?

A. Canvas or gum or leather or any suitable flexible material.

Q. 22. You have seen the machine operate, have you?

A. I have.

Q. 23. Was it a practical working machine?

A. A practical working machine, used for years; some of them used at the present time, I believe.

Q. 24. What was the difference, so far as those motions were concerned and those results, between that and the complainants' machine represented in Exhibit B B?

A. No difference in the results.

Q. 25. What was the next machine that you saw?

A. The machine called the Craig machine.

Q. 26. About when was that?

641 A. Within a year or two after. I think it must have been about 1870—no, it was before that; it might have been the latter part of 1869 or the early part of 1870.

Q. 27. Do you know when Craig got up his machine?

A. I don't know; I think about 1869 or 1870.

Mr. Boone:

Q. 28. What sort of a machine was that?

A. It was a ball-and-socket, a one-jointed machine.

Q. 29. A ball-and-socket joint connecting the discharge pipe with the curved section?

A. Yes, sir.

Q. 30. It only had one motion, then?

A. It had all the motions, as shown in the model, Exhibit M.

Q. 31. Had a horizontal and vertical motion?

A. Had a horizontal and vertical motion.

Q. 32. Then when the complainant took out his patent or made his invention there was nothing new in the ball-and-socket joint connecting the discharge pipe with the balance of the machine, was there?

A. There was not. I saw another machine with a ball-and-socket joint besides the Craig machine.

Q. 33. What was that?

642 A. One got up by a man by the name of Redstone.

Q. 34. Describe that.

A. It was similar to the Craig machine except that the hole in the socket was ovalish, giving it greater range laterally.

Q. 35. Then the first double-jointed machine that you ever saw was the Allenwood machine, was it?

A. That was the first I ever saw.

Q. 36. What was the next double-jointed machine that you ever saw?

A. The Jenkin-Richards.

Q. 37. Did you ever see one of those operate?

A. I saw it in the claim where they used it; but whether I saw it operate or not I am not certain; I don't recollect. I think it was not operating at the time.

Q. 38. What claim was that?

A. It was near Michigan Bluff.

Q. 89. What sort of a machine was that?

A. Similar to the model of the Richards machine here.

Q. 40. Describe it and its operation.

A. It had two joints, one for horizontal and one for vertical motion.

Q. 41. And both metal joints?

A. And both metal joints.

Q. 42. What was the difficulty, if any, in operating that machine?

643 A. Want of proportion in the parts.

Q. 43. Describe what do you mean by that.

A. There was a tendency to fly round if set in one way, and if set in the other there was a tendency to fly up, unless the discharge pipe was made sufficiently long to counter-balance that tendency, or unless a curve was put in the discharge pipe.

Q. 44. Do you know whether they ever used that Richards machine in hydraulic mining?

A. I saw it in the mine where they had no other machine to use, and they had considerable mining work done and everything was set in working order.

Q. 45. It looked as though they had been using it?

A. It looked as though they had been using it there.

Q. 46. That machine has never been extensively used, I suppose, has it?

A. No, sir.

Q. 47. What was the next double-jointed machine that came along in the progress of invention in hydraulic mining machinery?

A. The next that I ever saw was one that I got up myself.

Q. 48. What was that?

644 A. That was the Giant, represented by the model, Exhibit D.

Q. 49. You took out a patent on that, I b-lieve, did you not?

A. I took out a patent for the construction of that joint connecting the discharge pipe with the upper curved section.

Mr. BOONE:

Q. 50. Do you intend to have it understood that the model, Exhibit D, represents the machine which you got up and patented at that time?

A. No; not the machine that I had patented. One of the joints of that machine represented by Exhibit D was covered by a patent that I had previously taken out.

Mr. SCRIVNER:

Q. 51. Describe the operation of the machine represented by the model, Exhibit D, which you say was the next double-jointed machine that you saw after the Richards machine.

A. It has two joints—a swivel joint for a horizontal motion and the other a cup-and-flange joint for a vertical motion.

Q. 52. When did you get up that machine?

A. I think about 1871 or 1872.

Q. 53. What was the next double-jointed machine that you ever saw?

A. The Rice machine, represented by Exhibit F.

645 Q. 54. How many joints has that?

A. It has two motions.

Q. 55. How many joints?

A. It has two joints, and one joint has two distinct pairs of bearing faces.

Q. 56. What was the next double-jointed hydraulic machine that you ever saw?

A. The Fisher machine.

Q. 57. Describe the difference, if any, in the mode of operation and the results accomplished between all these double-jointed machines, and state whether it is a mere difference in construction or whether there is any difference in principle?

A. The actual results accomplished vary in all of them—the amount of the result.

Q. 58. Commencing with the Allenwood machine, describe the difference in construction of the joints of the various machines.

A. The Allenwood has a swivel metal joint and a flexible joint for vertical motion. The plaintiffs' machine has two metal joints, but will not be so effective under the same circumstances—that is, will not throw so forcible a stream, will not accomplish so much work as the Allenwood machine.

Q. 59. But, confining yourself to the joint connecting the 646 discharge pipe with the upper curved section, describe what the difference is in these different machines.

A. That joint in the plaintiffs' machine is a semi-cylindrical one, kept in position by the pressure of the water and held there by the pressure of the water.

Q. 60. Is not that, to some extent, true of the Allenwood machine; is not that joint kept in position by the force of the water?

Obj. (Objected to as leading.)

A. What I mean is, by kept in position the bearing faces are kept in contact with each other; the pressure of the water forces a contact of the bearing faces of the joint proper.

Q. 61. So far as the joint connecting the discharge-pipe with the upper curved section in the Allenwood machine, and the joint connecting the discharge pipe with the upper curved section in the complainants' machine are concerned, what is the difference in the results of those two machines, if any?

A. They accomplish the same purpose, but the Allenwood will accomplish more than the other.

Q. 62. Were not the two joints intended necessarily to perform the same functions?

A. Undoubtedly.

647 Q. 63. Comparing that machine, represented by Exhibit L, with the Allenwood machine, is not the same thing true in regard to that?

A. Yes, sir; it accomplishes the same results.

Q. 64. And in all of them that motion is accomplished by means of the joint which connects the discharge pipe with the upper curved section?

A. It is. I think the Allenwood machine will accomplish more results than this Exhibit L, so far as the force of the steam is concerned.

Q. 65. In all of these double-jointed machines that you have referred to you find that joint connecting the discharge pipe with the upper curved section, and you find it was put there for the same purpose, do you not?

A. I do.

Q. 66. And the difference between those joints is a difference in mechanical construction, is it not?

A. Simply mechanical construction; that is all.

Q. 67. Do you include in that, too, the difference in the material of which the joints are composed?

A. Yes, sir.

Q. 68. In the Allenwood machine the upper joint, or joint connecting the discharge pipe with the upper curved section, was made of some kind of elastic material, was it not? 648

A. Yes, sir.

Q. 69. While in all these others it is a metal joint?

A. Yes, sir; except that in this (Exhibit L) the metal alone wouldn't constitute a joint without the packing; that is an element coming in there that is required to make it a joint.

Q. 70. Then, in your judgment, the difference between the joint in the Allenwood machine and in the complainants' machine is one of construction?

A. Of construction.

Q. 71. Is there any difference in principle that you can observe?

A. I don't exactly understand what you mean by principle. That is, they accomplish the same result in the same way—that is, they accomplish the same results, but the mode of construction is different in all of them.

Q. 72. What is the difference between the joint connecting the discharge pipe and the upper curved section in your machine and the corresponding joint in your machine?

A. In the complainants' machine the enlargement, so to speak—the male part of the joint—the cylindrical enlargement rests in its appropriately-shaped socket, and is kept there by the pressure of the water.

649 Q. 73. Does that enlargement fit closely in that socket?

A. It is a ground joint and intended to be water tight. In the defendants' machine, Exhibit L, the male part of the joint, or the part which enters the other part, is on the curved section instead of on the discharge pipe. There is no metallic socket, but there is an annular valve or packing confined to the leader of the discharge pipe by a flange. This packing makes a water-tight joint. Were it not for this packing the average leakage in the joint would be about a hundred miner's inches constant flow.

Q. 74. Do you find any ball-and-socket joint in the complainants' machine?

A. I do not.

Q. 75. What do you call the joint in your machine?

A. I call it a hinge joint, inasmuch as it works on pivots.

Q. 76. How is the discharge pipe held on the ball in your machine?

A. By means of two pivots.

Q. 77. What is a ball-and-socket joint in mechanics, according to your understanding?

A. A ball-and-socket joint is a spherical enlargement fitting inside an appropriately shaped socket and resting thereon.

650 Q. 78. How is the spherical enlargement held in the socket?

A. The hole in the socket is smaller than the enlargement, and hence it cannot be pulled through.

Q. 79. Did you ever, in any class of mechanical construction or machinery, see a ball-and-socket joint where the socket was fastened onto the ball-shaped enlargement by means of pivots or screws?

A. I never did.

Q. 80. But as understood by the mechanics, the ball is held in the socket by the socket being constructed on the ball, is it not?

Obj. (Objected to as leading.)

A. Outside of the ball, and the whole in the socket is smaller than the ball, so that the ball can't be pulled through.

Q. 81. Since the first of September, 1879, have you made any hydraulic machines in which the swivel-jointed sections and ball-and-socket joint sections were combined with a lever working through slotted posts, strap, lever, and pawl and ratchet?

A. I have never made any such.

Q. 82. Take the model of the complainants' machine, Exhibit B B, and I will ask you if you find in that machine a ball-and-

651 socket joint for connecting the discharge pipe with the end of the swivel section?

A. I do not.

Q. 83. If you do not find a ball-and-socket joint what sort of a joint do you find there?

A. A semi-cylindrical joint working in the same manner that the ball-and-socket joint works—that is, the internal connection.

Q. 84. Take the model of your machine, Exhibit L, and see if you find a discharge pipe having a cylindrical and ball-shaped enlargement at its base.

A. I do not.

Q. 85. And in combination with a corresponding cup-shaped socket at the end of the horizontally-swivel*l*ing section?

A. I do not.

Q. 86. State if you find in your machine, represented by the model Exhibit L, anything that is an equivalent to the semi-cylindrical or ball-shaped enlargement at the base of the discharge pipe, as shown in the model of the complainants'. machine, Exhibit B B?

A. I do not.

Q. 87. Do you find in the model of your machine, Exhibit L, anything equivalent to the cup-shaped section at the upper end of the upper curved section as in the complainants' machine?

652 A. I see no cup-shaped socket in the complainants' machine. I see a semi-cylindrical-shaped socket.

Q. 88. But you say it is not a cup-shaped socket?

A. It is not a cup-shaped socket.

Q. 89. Do you find any socket at all in your machine connected with the upper curved section?

A. I do not.

Q. 90. I will ask you whether or not in all of these machines it is necessary to use what is known as rifles for the purpose of making them practically operative machines?

Obj. (Objected to as immaterial.)

A. In order to make an effective working machine it is necessary.

(Continued until Monday, 8th instant, at 10 o'clock a. m.)

MONDAY, *November* 8, 1880.

(Further continued, by consent, until Thursday, 11th instant, at 10 o'clock a. m.)

653 THURSDAY, *November* 11, 1880.

Present: Mr. Boone, of counsel for complainant-; Mr. Scrivner, of counsel for respondent-.

Examination-in-chief of RICHARD HOSKIN (continued).

By Mr. SCRIVNER:

The WITNESS: I would like to make a correction. There was a two-jointed machine that I saw which I did not mention before. I saw that shortly after I saw the Allenwood machine. It was Craig's.

Q. 91. Please describe it,

A. The back joint was a ball-and-socket joint, nearly horizontal; the front joint was the same as in the Allenwood machine—a sleeve joint. It was a two-jointed machine, perfectly practicable; defective in not having sufficient radius or lateral motion under all circumstances.

Q. 92. It would do the work, would it?

A. Oh, yes.

Q. 93. What we call the swivel joint in these exhibits in this case was a ball-and-socket joint, was it?

654 A. Yes, sir; only the swivel joint make- a complete circle, and his ball-and-socket joint only made about a quarter of a circle.

Q. 94. About when was it that you first saw that machine?

A. Very shortly after I saw the Allenwood machine. I think it was about 1869 that I first saw this Craig machine.

Q. 95. Were they using it?

A. Yes, sir.

Q. 96. Where was that Craig machine used?

A. It was used in the claim owned by Taylor & Company near Gold Run.

Obj. (Complainant- objects to all the above testimony in relation to the Craig machine referred to on the ground that no notice of the introduction of such testimony has been given.)

Q. 97. What is Exhibit 1 now shown you?

A. It is a ball-and-socket joint.

Ex. 1.

(Respondent- puts in evidence the ball-and-socket joint above referred to, marked "Respondents' Exhibit 1.")

655 Cross-examination of RICHARD HOSKIN by MR. BOONE:

Q. 1. In what business are you engaged at present?

A. Manufacturing machines, and so forth.

Q. 2. What kind of machines?

A. Hydraulic and other machines—general foundry business.

Q. 3. Do you manufacture machines owned by the defendants and called the Little Giant machine?

A. I do.

Q. 4. How long have you been connected with that machine?

A. Seven or eight years last past.

Q. 5. What were you engaged in prior to your connection with the Little Giant machine?

A. Manufacturing hydraulic pipes—fitting up mining claims.

Q. 6. What hydraulic machine did you manufacture prior to manufacturing this Little Giant?

A. A machine called the Dictator.

Q. 7. That was one for which you held a patent, was it?

A. Yes, sir.

656 Q. 8. How long did you manufacture that machine?

A. I manufacture them now when called for.

Q. 9. I mean prior to your taking hold of the Little Giant machine?

A. From some time in 1870, I think.

Q. 10. What were you engaged in prior to 1870?

A. Manufacturing hydraulic pipe.

Q. 11. For how long were you engaged in that business?

A. About seven years prior to 1870.

Q. 12. What was your business before you engaged in the manufacture of hydraulic pipe?

A. Various; tin-smithing, sheet-iron work, copper-smithing, plumbing. I was not particular what I turned my hand to.

Q. 13. Then 1870 was the commencement of your connection with these hydraulic machines, was it?

A. In 1870; yes.

Q. 14. What hydraulic machine did you say was the first one you ever saw?

A. The Allenwood.

Q. 15. When was that?

A. I think that must have been in 1869. It might have been in the winter of 1868 and 1869—some time in that mining season I think it was. 657

Q. 16. Where did you see it?

A. I saw it at Gold Run.

Q. 17. At work?

A. I didn't see it at work.

Q. 18. Did you ever see it at work before you commenced to make your own machines?

A. I have seen it at work about that time. I am not positive whether it was immediately before or immediately after.

Q. 19. What was your object in getting up a hydraulic machine?

A. To make money and to improve on those already in existence.

Q. 20. To improve upon the Allenwood?

A. Any machine that I had seen.

Q. 21. Had you seen any other machine besides the Allenwood?

A. I had seen the Allenwood and the Craig.

Q. 22. And your object was to improve upon those machines?

A. It was.

Q. 23. Do you consider your machine an improvement upon either of the others?

A. I consider it as such in many respects.

Q. 24. State in what respects you consider it an improvement.

658 A. It was a one-jointed machine; it worked easily; it had more range than the Craig double-jointed machine. I might say that I had seen what was known as the Craig single-jointed machine before I made any machines; it was a very hard machine to work, liable to get out of repair, and I thought the machines I made were not so liable to get out of repair and would work easier and when out of repair—that is, when they got to leaking much—more easily repaired.

Q. 25. What was the character of the joints in the Craig double-jointed machine that you speak of?

A. A ball-and-socket joint for the back joint and a flexible joint similar to the Allenwood for the front joint.

Q. 26. What motion had the ball and socket?

A. Lateral.

Q. 27. Horizontal motion, eh?

A. Horizontal motion, or nearly.

Q. 28. It had the same motion as the Little Giant and the Allenwood machine?

A. Yes, sir.

Q. 29. No other motion?

A. It had a ball-and-socket motion; a variety of motions.

Q. 30. It was a semi-universal joint, then, was it?

A. A semi-universal joint.

659 Q. 31. Then the Craig double-jointed machine had two semi-universal joints, had it?

A. Yes, sir.

Q. 32. How did that machine work?

A. The machine would work very well, but it was defective in range.

Q. 33. Did you see it at work?

A. I did; when it was tried first of all it would not answer; it would not throw the stream. I then, at the request of Mr. Craig, put a rifle in the discharge pipe, and it worked better.

Mr. Scrivner:

Q. 34. Did it work successfully?
A. It would work successfully, but, as I said before, it was lacking in horizontal range; you couldn't get a range of quite half a circle out of both joints.

Mr. Boone:

Q. 35. You say that the rear joint was a ball-and-socket joint?
A. Yes, sir.
Q. 36. Similar to the ball-and-socket joint, Exhibit I, which you have put in evidence?
A. Similar.
Q. 37. Any difference in construction between the two?
A. Yes; there is a spring in Exhibit I which isn't in that, but the general principle of the joint proper is the same, except
660 that the ball-and-socket joint in the Craig machine had a little more play. The hole in the socket was larger in proportion to the ball in the machine than in Exhibit I, giving the machine more play than Exhibit I has, in proportion.
Q. 38. Did you consider your machine an infringement upon the Craig machine?
A. I did not.
Q. 39. Which was the next machine that you saw after working yours?
A. After working my own I saw the Rice machine next, that represented by Exhibit F.
Q. 40. Then the Allenwood machine was the first double-jointed machine you ever saw?
A. Yes, sir.
Q. 41. The next was the Craig?
A. Yes, sir.
Q. 42. And the next was the Rice?
A. Yes, sir; as well as I recollect.
Q. 43. Which was the next double-jointed machine that you saw?
A. I think the Jenkin-Richards; I am not certain that I saw it in operation; I saw it set in the claim, but it was after the water season, as well as I recollect, when I went there, or at least there was a very limited supply of water. It was not working, I recollect now, while I was in the claim.
Q. 44. When was that, Mr. Hoskin?
661 A. I think that was about 1872 or 1873; I am not certain, exactly; I should judge it was about that time.
Q. 45. Was it before or after you obtained your patent on the single-joint machine?
A. After.
Q. 46. How long after?

A. It was after Craig had commenced suit against me for infringement.

Q. 47. Then you never saw the Richards machine until after the suit was commenced against you by Craig?

A. No.

Q. 48. Had you ever seen Fisher's machine prior to the time when you saw the Richards machine?

A. I had not.

Q. 49. How long subsequent to the time that you saw the Richards machine was it that you first saw the Fisher machine?

A. Some years, I think.

Q. 50. How many years?

A. I don't know; it was some time after Craig had commenced suit. I think I saw it at work at or near Nevada City—the first place I ever saw it.

Q. 51. It was some years after you had seen the Jenkin-Richards machine?

A. No; not some years after I first saw the Richards machine.

662 Q. 52. How long after was it?

A. It might have been a year or so after. I made no note of the dates at the time I was in Nevada City, I think, in reference to that patent suit.

Q. 53. How long was it after the suit of Craig against you was first commenced that you first saw the Richards machine?

A. I don't know that; it was while I was hunting testimony in reference to the prior use of a rifle.

Q. 54. That was during the progress of that suit?

A. Yes, sir.

Q. 55. Do you recollect, Mr. Hoskin, of calling upon Mr. Fisher at the time the suit was commenced by Craig against you for the purpose of consulting him in regard to that matter.

A. I do.

Q. 56. Was that before or after you answered to the suit?

A. Before, I think.

Q. 57. Where was he when you called on him?

A. I am not certain whether he was in his shop or in the house near by. In his workshop, I think.

Q. 58. What was he doing?

663 A. Working.

Q. 59. What on?

A. I don't recollect now.

Q. 60. Did he not at that time show and explain to you his machine?

A. I recollect his showing to me his patent papers. There were parts of machines there, but I don't recollect there being a whole machine. There were parts of machines, and he was at work on a machine, I think.

Q. 61. Did he not have a machine setting on the table which he exhibited to you?

A. Not that I recollect; he showed me his patent papers.

Q. 62. You understood fully what his machine was at that time, did you?

A. I think I did.

Q. 63. You don't call that showing you his machine?

A. Well, I understood by showing the machine that you meant the machine set up. I don't think there was a machine set up there, although there might have been. I saw parts of his machine and I saw the patent papers.

Q. 64. When did you make your application for a patent for a double-jointed machine?

A. I never made any application.

664 Q. 65. When did you first construct a double-jointed machine?

A. I think somewhere about 1871 or 1872.

Q. 66. Describe that machine.

A. Exhibit D is a substantially correct model of that machine.

Q. 67. Did you first make that machine before or after the commencement of the suit by Craig against you?

A. Before.

Q. 68. You are positive it was before?

A. I believe it was before.

Q. 69. How long before?

A. I am not certain; some months, I think.

Q. 70. Can't you be certain as to that?

A. Not without reference.

Q. 71. Can you by reference?

A. I think I can ascertain from the books of the foundry where I got them made.

Q. 72. Will you furnish the date when you first constructed a double-jointed machine?

A. Yes, sir; I will endeavor to do so. The first was made by the Miners' foundry in the city here.

Q. 73. How many of those machines did you make.

A. I don't recollect; quite a number. I made hundreds altogether, I should judge. 665

Q. 74. Is the Little Giant Machine as it is now constructed made under any patents; If so, state what patents.

A. Yes; there is patent for rifles in the discharge pipe, the Macy & Martin; it is also covered by the Allenwood patent, which covers the two-jointed machine in combination with rifles in discharge pipe; it is also covered by the Hoskin patent with reference to the front joint.

Q. 75. Does either of those patents describe a machine constructed like the machine made by the respondents in this case?

Obj. (Objected to by respondents on the ground that the patents are the best evidence as to what is described in them.)

A. The patents are not for a full machine, but only for parts of the machine. The Macy & Martin patent, you may say, refers to the discharge pipe of the machine only.

Q. 76. Does not the Macy & Martin patent on the rifles expire in December of this year?

A. It does.

Q. 77. Does not the Allenwood patent expire *of* July, 1881?

A. I believe it does.

Q. 78. Then under what patents will the respondents manufacture the Little Giant machine? 666

Obj. (Objected to by respondents as incompetent, irrelevant, and immaterial.)

A. I don't know whether I will be manufacturing machines at all then.

Q. 79. Then do you hold that the machine manufactured by the respondents is described and covered by these patents which you have mentioned?

Obj. (Objected to by respondent- as incompetent, calling for a conclusion of law.)

A. Different parts of the machine are covered by the different patents. There is no one patent for the machine, as a whole.

Q. 80. Is it not a fact that two-jointed metal-jointed hydraulic machines have displaced all prior machines in the market?

A. I can't answer that question from my own knowledge; I have heard of Allenwood's machine being used occasionally in small claims.

Q. 81. Have you heard of any being made and sold since the Little Giant machine was manufactured and put upon the market.

A. I have not, although there may have been.

Q. 82. The parties for whom you manufacture own the Allenwood patent, do they not?

A. Yes, sir.

667 Q. 83. Do they manufacture and sell the Allenwood machine?

A. I think not. I think there is no call for it.

Q. 84. Why do they not manufacture and sell the Allenwood machine?

A. Because the customers call for machines of a different shape.

Q. 85. Have not the parties for whom you manufacture ever made or sold any Allenwood machines?

A. I don't know of any having been sold by them.

Q. 86. How long have you manufactured for those parties?

A. Since the compromise of the suit. I don't recollect the date exactly—I think about 1874 or 1875.

Q. 87. When did they acquire the Allenwood patent?

A. I don't know.

Q. 88. Have they built or sold any of the Allenwood machines since you were connected with them?

A. Not that I know of.

Q. 89. Which of the two machines, the Allenwood or the Little Giant, do you consider the more effective machine?

668 A. I think the Allenwood will throw the strongest stream.

Q. 90. I mean the more effective machine for hydraulic mining purposes.

A. When we speak of an effective machine we generally mean the force with which it will throw the water—that is, provided it can be manipulated. Then there are other circumstances which might come in, as the durability of the machine. One machine may be more effective than another, and yet it might lack a durability which will make the other machine more desirable.

Q. 91. You have explained; now, please answer my question.

A. I say if you mean by effectiveness the force with which it will throw the stream, I don't know but the advantage is on the side of the Allenwood. As to strength and durability the Little Giant is superior.

Q. 92. What peculiarity in the Allenwood machine makes it throw a stronger stream than the Little Giant?

A. There is no obstruction; the flexible sleeve makes an easier turn—an easier curve—not so much friction in the joint as there is in the Little Giant.

Q. 93. Is the difference in the effectiveness of the stream a matter of great consequence?

669 A. Sometimes.

Q. 94. Still you say the parties for whom you manufacture, although owning the Allenwood patent, have never made or sold the Allenwood machine?

A. No; not that I know of; I don't think they have. For general hydraulic mining purposes I believe the Giant is the best machine.

Q. 95. Why?

A. Strength, durability.

Q. 96. Wherein is the superiority and durability?

A. More particularly in the front joint being easily repaired when it gets to leaking.

Q. 97. What do you understand by a ball-and-socket joint?

A. I understand one part to be a sphere or part of a sphere resting on a properly-shaped socket, the two together constituting the joint.

Q. 98. Are not ball-and-socket joints variously constructed?

A. Yes; they are; some are made solid and some are hollow. The ball-and-socket joint is used for a variety of purposes, but they maintain the same general character, a spherical ball running in a properly-shaped socket.

670 Q. 99. Where you find a ball resting and working in a socket would you call it a ball-and-socket joint?

A. Yes; provided the ball was not pivoted, if it was a pivoted joint I should call it a pivoted joint or a hinge joint.

Q. 100. If you find a ball pivoted in a socket so as to work in the socket, would not that be a ball-and-socket joint?

A. I think not; I should not understand it as such.

Q. 101. The pivot would prevent it from being a ball-and-socket joint, would it?

A. No.

Q. 102. Then what is it that prevents it from being a ball-and-socket joint?

A. The pivot in a ball-and-socket joint is something that is unnecessary and would be detrimental to it.

Q. 103. What do you call the front joint in the Little Giant machine.? Just describe it.

A. I call it an equivalent to the cup flange and packing joint.

Q. 104. Describe the joint; state what it consists in.

A. One part, attached to the upper curved section, is a spherical enlargement; the other part is a conical socket or cup at the
671 butt end of the discharge pipe. The flange of this socket or butt is bolted to another flange through which run two pivots. These pivots enter the ball-shaped enlargement. There is an annular valve or packing held in its place by the pivot flange. This packing turns up against the ball on the inside forming a valve, making it a water-tight joint.

Q. 105. How many motions has that joint?

A. One.

Q. 106. What is the object of the pivots?

A. It is a center around which the bearing surface of the joint revolves.

Q. 107. They form a journal, do they not, around which the joint works?

A. Yes; they form a journal and without the pivots. I would have no joints; they are necessary to constitute the joint.

Q. 108. Then the ball shape has no object except to give the one motion?

A. That is all.

Q. 109. And the pivots form the center about which the joint works?

A. Yes, sir.

Q. 110. Now, take Complainants Exhibit B B and describe his front joint.

A. There is a semi-cylindrical enlargement at the butt end of the discharge pipe; this rests on a properly-shaped socket
672 and *and* it is kept in position by the pressure of the water.

Q. 111. Do you find any pivot bearings or equivalents to pivot bearings in the complainants' machine?

A. I do not.

Q. 112. Do you find any bearings?

A. Nothing but the joint proper.

Q. 113. Complainants joint has a cylindrical enlargement, has it?

A. It has a semi-cylindrical enlargement at the butt end of the discharge pipe.

Q. 114. Does not that enlargement fit against shoulders at each end of the semi-cylindrical enlargement?

A. It rests against its socket.

Q. 115. Does it not fit against shoulders at each end of the semi-cylinder?

A. It does.

Q. 116. Does not this joint have the same motion that the front joint in the Little Giant machine has?

A. It has to a limited extent.

Q. 117. The limit is only caused by the difference in the size of the enlargement, is it not?

A. That cause and other causes.

Q. 118. What are the other causes?

A. You can't enlarge the opening in the Fisher joint without also enlarging the semi-cylindrical portion at the end of the discharge pipe; were you to do so when it came in contact with the stream it would choke the flow of the water in certain positions. 673

Q. 119. Suppose the sides of the pipe directly in front of the enlargement to be the same in both joints, the diameter of the enlargement the same, and the size of the opening the same, what then would be the difference in the motions of the front joints in yours and the Fisher machine?

A. You would have the same motion but would have no water-tight joint in the Fisher machine.

Q. 120. Do not the edges of the semi-cylinder in the front joint of Exhibit B B form journals for the semi-cylinder to work on?

A. I don't consider them as journals; I regard a journal as a center of a circumference.

Q. 121. If you had a joint the ends of which were of the same diameter as the shaft itself, and these ends rested in boxes and rotated in the boxes, would you not call those ends journals?

A. They might be styled journals in that case.

Q. 122. Then it would simply be a question of diameter of journals, would it?

A. I regard a journal, as I said before, as a center for something larger to revolve around. 674

Q. 123. Then, according to your ideas of a journal, the thing that revolves around a journal must be larger than the journal?

A. In the case of the shaft you spoke of I should rather call it a bearing than a journal.

Q. 124. Where the pivot on which it worked was smaller than the cylinder which was carried by it, would you not call that a bearing as well?

A. That would be a bearing and a journal as well.

Q. 125. Then in the case of the front joints in both yours and the complainants' machines, they both have bearings, have they not?

A. They both have bearings? No; the bearings of the one constitutes the joint proper; the bearings in the plaintiffs' machine, by its contact, constitutes the joint proper. The bearings in the defendants' machine is the center around which the joint proper revolves.

Q. 126. Still they are both bearings on which the joint proper revolves, are they not?

A. Yes; they are both bearings on which the joint moves—that is, in the one case it is the joint and in the other case it is not the proper. The pivots are only necessary to hold the parts in contact.

675 Q. 127. Now, if the complainant, instead of making his enlargement cylindrical had made it spherical and the socket had corresponded, and instead of making his journals or bearings the full diameter of the cylinder had made them smaller, would there be any difference between his front joint and the front joint of the Little Giant machine?

A. There would be a difference.

Q. 128. State what would be the difference.

A. The joint would wear faster than the bearing on account of the increased friction, and it would soon get to leaking.

Q. 129. If the bearing were of the same diameter and the cylinder instead of being cylindrical in shape had been ball shaped, and the socket correspondingly shaped, what would be the difference between the two joints referred to?

A. He would have parts which were useless; it would make the same motion, but, in his case, the pivots are useless.

Q. 130. If it was ball shaped?

A. Certainly.

Q. 131. What office does the spherical portion of the respondents' joint perform that the semi-cylindrical portion of the complainants' joint does not?

676 A. No office; it serves as one part of the joint.

Q. 132. It is merely a difference in the construction of the two joints, is it not?

A. Yes.

Q. 133. In the respondents' joint there is a ring fastened to the flange at the butt of the discharge pipe by means of screws, is there not?

A. There is.

Q. 134. Is there not a similar ring fastened to the flange on the complainants' machine represented by Exhibit B B?

A. No, sir; not for the same purpose.

Q. 135. I ask you if there is not a ring fastened by means of screws to the front end of the upper section.

A. There is a flange attached to and part of the socket piece.

Q. 136. Is there not, in the respondents' joint, a ring attached by means of screws to the flange in the upper end of the curved section?

A. There is a flange to the socket, which is attached by screws to to the elbow.

Q. 137. In the same manner that the ring is attached in the respondents' machine?

A. It is bolted. It is attached to the elbow in one case and to the discharge pipe in the other.

Q. 138. Is not the ball in the respondents' machine pivoted to the ring?

677 A. It is.

Q. 139. Is not the cylinder in the complainants' machine held in the opening in front of the ring which is fastened to his machine?

A. It is held in the opening.

Q. 140. When the pressure of the water is on the respondents' machine does not the strain come upon this ring?

A. It comes on the pivots attached to the ring.

Q. 141. Under the same conditions does not the pressure come upon the ring and portion of the socket attached to it in the respondents' machine?

A. It has to take the pressure.

Q. 142. Is not the only difference in the practical working of those two joints the difference in the size of the bearings in which the moving parts move?

A. No; both joints make the same motion, if that is what you want to get at.

Q. 143. (Q. 142 repeated.)

A. No.

Q. 144. State wherein there is any other difference.

A. One will move very much easier than the other.

Q. 145. Why?

A. The friction being less——

678 Q. 146 (interrupting). Is not that on account of the size of the bearings?

A. No.

Q. 147. What is the reason of it? What is it that makes friction?

A. The friction being less in the bearing of the joint proper in the one case—less in the defendants' machine than in the plaintiffs'.

Q. 148. Is not that friction caused by the size of the bearing parts, the proportion of metal surfaces coming in contact with each other?

A. No; not altogether; in the defendants' joint the greater the pressure of the water the greater the tendency to come apart; in the plaintiffs' joint the more the pressure the more the bearing parts are forced together. In other words, the true circumference in the plaintiffs' machine has to hold all the pressure, and in the other case, in the defendants' machine, the greater portion of the pressure is taken by the pivots.

Q. 149. Now, supposing both joints had an equal amount of bearing surface, what would be the difference in the working of the joints?

A. The plaintiffs' machine would work a great deal harder than the defendants' for the reason just stated, that the pivots in the one case would take the pressure whereas there is no pivots to 679 take the pressure in the other, and it would be taken by the joint proper.

Q. 150. Then you claim that if the bearing surfaces were the same and the size of the pivots were the same there would be no difference in the practical working of the two machines? If we reduced the size of the bearing in the complainants' machine to the size of the pivots in the respondents' machine, so that the bearing of the two machines would be equal, what would be the difference in the operation of the two machines?

A. The complainants' would be a practicable machine and the defendants' entirely impracticable for all purposes.

Q. 151. State why.

A. For the reason that the size of the pivots is about five-eighths to three-quarters of an inch in the defendants' machine. If you reduced the size of the semi-cylinder——

Q. 152 (interrupting). I did not say anything about reducing the size of the semi-cylinder, but the size of the bearing parts.

A. If you reduce the size of the semi-cylinder down to five-eighths of an inch that outlet would be less than a sixteenth of an inch. which would make the machine entirely impracticable as a hydraulic machine.

Q. 153. I did not say anything about reducing the size of the cylinder, but only of the pivots——

680 A. (Interrupting.) There are no other pivots——

Q. 154. Or bearing points.

A. There are no other bearing points than the semi-cylinder.

Q. 155. Do you oversee the manufacturing of all the Little Giant machines made and sold?

A. I do not.

Q. 156. Do you know where all the Little Giant machines made and sold are constructed?

A. I believe I do.

Q. 157. Do you know that you do?

A. No more than I know the patterns that they are cast from.

Q. 158. Do you know that all the Little Giant machines made and sold are made from any particular set of castings?

A. All that I manufacture are manufactured in my foundry, and are made from my patterns, from my get-up. I am not always present at the foundry; hence do not see all the machines that are sent out.

Q. 159. You are frequently present for some length of time—for some weeks at a time—are you not?

A. Yes, sir.

Q. 160. There are a great many machines made and sold that you do not see?

681 A. Yes; but I know the character of all the machines that are made and sold there.

Q. 161. Do you know whether any machines have been made and sold by you or by any one under your authority since September 2, 1879, in which a lever and rigging similar to that described and shown in the engraving in Exhibit E E is used?

A. I don't think they have; not to my knowledge.

Q. 162. There might have been without your knowledge, might there not?

A. There might have been, but I would have been very likely to hear of it.

Q. 163. Do you charge any more for machines with that lever arrangement than you do for others?

A. We do.

Q. 164. Have you had any returns made to you since that date mentioned or at any time for machines made during that time having lever and rigging attached?

A. I have heard of none. I have seen no record of any on my books; neither have I heard of any being manufactured.

Q. 165. And you have had no returns made of any?

A. Not that I know of.

(Continued by consent until a day to be agreed upon by counsel.)

682 SATURDAY, *December* 4, 1880.

Present: Mr. Boone, solicitor for complainant-; Mr. Scrivner, solicitor for respondent-.

Deposition of H. B. Angell.

Examination-in-chief of H. B. ANGELL (a witness on behalf of respondent-) by Mr. SCRIVNER:

Q. 1. Please state your name, age, place of residence, and occupation.

A. Name, H. B. Angell; age, fifty; place of residence, San Francisco; occupation, manufacturer of machinery.

Q. 2. You are a practical mechanic, are you not?

A. Yes, sir; I profess to be.

Q. 3. How long have you been engaged in the manufacture of machinery and in mechanical arts generally?

A. Since 1844.

Q. 4. Do you know what a ball-and-socket joint is?

A. Yes; I have seen a ball-and-socket joint.

Q. 5. What is it?

A. A ball-and-socket joint is a joint where both parts of the ball and socket are bored out so that they fit together completely
683 and form what we term a universal joint—that is, a joint not like this (on Exhibit L), but a joint that you can throw off on any angle.

Q. 6. The ball also fits into the socket?

A. The ball fits the socket, and it is made so that you can swing it to any point of the arc or circle or radius and it will remain tight without bending?

Q. 7. How about the pressure; does it force the two parts together or apart?

A. In the ball-and-socket joint the pressure is outward from the center and does not have a tendency to force them apart. You take a half ball like that shown in Exhibit I, and the pressure would force the ball into the socket as it does here. In this the tendency of the pressure is to force the ball into the socket.

Q. 8. Look at the model exhibits in this case, all of which are now before you and see if you find a ball-and-socket joint—one or more—and, if so, designate it.

A. (After examination of model exhibits.) There is one. (Referring to Exhibit I.) That is the only one there is on exhibition here.

Ex. I.

(The ball-and-socket joint above referred to is put in evidence by respondent- and marked respondents' Exhibit I.)

684 Mr. BOONE: What is the object of the introduction of Exhibit I?

Mr. SCRIVNER: To illustrate a ball-and-socket joint.

Q. 9. Have you particularly observed the upper joint on the model, Exhibit B B?

A. I have.

Q. 10. You say that is not a ball-and-socket joint?

A. It is not.

Q. 11. Have you observed the upper joint in the model, Exhibit L?

A. Yes.

Q. 12. And you do not call that a ball-and-socket joint?

A. No, sir; not by any means.

Cross-examination of H. B. ANGELL by Mr. BOONE:

Q. 1. What is your present business, Mr. Angell?

A. I am in the building or manufacturing of machinery.

Q. 2. Where?

A. On First street, San Francisco.

Q. 3. What is the name of your establishment?

685 A. Golden State and Miners' Iron Works.

Q. 4. Have you ever constructed any of these hydraulic machines?

A. No, sir; I don't think I have, not for hydraulic machines.

Q. 5. You have never constructed any hydraulic machines for either of the respondents in this case, have you?

A. No, sir; I will say, though, that although I have not made any hydraulic machines I have made rifle bars, I think a few years ago, for him. I think we made two castings for nozzles for hydraulic machines for him some years ago that he used up in the mountains.

Q. 6. How long ago was that?

A. I should say ten or twelve years; might be fourteen.

Q. 7. Please define again your idea of a ball-and-socket joint.

A. A ball-and-socket joint is a joint that is composed or constructed of a ball or of a section of a ball and a socket that fits it, or a ball and socket fitted together, and is so constructed as to allow the free working of the joint in any direction, describing a circle, without obstruction and remaining tight.

Q. 8. Then a ball-and-socket joint consists of two parts, does it?

686 A. There is two main parts to a ball-and-socket joint you can attach on, not interfering with the joint or pipe at one end, or an arm of any kind, but it does not form a part of the joint; a ball-and-socket joint is two parts.

Q. 9. I am speaking of it as a joint.

A. That is composed of two parts.

Q. 10. One is a ball-shaped enlargement, is it?

A. Yes, sir.

Q. 11. Fitting in a corresponding socket?

A. Yes; a corresponding socket.

Q. 12. Are not ball-and-socket joints variously constructed?

A. They are termed by other and different names.

Q. 13. That does not answer my question. Are not ball-and-socket joints variously constructed?

A. No; perhaps sometimes you may make the ball of brass and sometimes of iron; still the construction is the same; they are constructed the same.

Q. 14. Where you find a ball fitting in a socket and moving would you not call that a ball-and-socket joint?

A. No, sir; unless it moves upon a full circle or moves in any
direction without obstruction, for instance, like this (Ex-
687 hibit I), which will move at any point, that is a ball-and-
socket joint; when you have another kind of joint, for instance, a joint like any of these others which swing in one direction, it is not a ball-and-socket joint.

Q. 15. I will ask you if the upper joint in the model you hold in your hand, marked Complainants' Exhibit L, has not a ball-shaped enlargement.

A. It has a ball-shaped enlargement.

A. It has a ball-shaped enlargement.

Q. 16. Does not that ball-shaped enlargement fit into a socket?

A. No, sir; it is not a socket.

Q. 17. Does it fit into an opening?

A. It fits into a funnel-shaped pipe, if you please to call it.

Q. 18. Does not that funnel-shaped pipe enclose a portion of the ball when the joint is put together?

A. Certainly.

Q. 19. Does not that funnel-shaped opening serve the place of a socket, answer as a socket?

A. No, sir.

Q. 19½. What is a socket?

A. A socket for a ball joint——

Q. 20 (interrupting). I simply ask you what is a socket?

A. There is various kinds of a socket.

688 Q. 21. Is not that bell-shaped enlargement on Exhibit L
one form of a socket?

A. No; I should not say it was.

Q. 22. Then define a socket without reference to a ball-and-socket joint.

A. You might call a socket any place where another part enters into for the purpose of the steadying or holding of it, like a castor; there is one part of a castor we call a socket.

Q. 23. Does not that bell-shaped opening in the upper joint on Exhibit L serve to hold and steady the ball?

A. No; I don't think it does.

Q. 24. What service does it perform in that joint?

A. It is simply to hold the water or fluid from throwing off?

Q. 25. Has it anything to do with the operation of the joint?

A. I don't think it has.

Q. 26. Would you have a joint in that machine without the bell-shaped opening?

A. Certainly you would. Suppose that pipe ran out parallel instead of bell shaped, it would make no difference. You make the joint of that packing, and no matter how that packing is held there you get your joint. The joint would be there the same if this pipe was continued out to any indefinite length.

689 Q. 27. Then do I understand you to say that you would have a joint in Exhibit L if there were no bell-shaped enlargement fitting over the ball?

A. I stated that——

Q. 28 (interrupting). Answer my question.

A. I can't answer it except by explaining the question.

Q. 29. You can say whether or not there would be a joint there if there would be no bell-shaped enlargement.

A. You ask me a certain question and I say if this pipe was run out parallel—even funnel shaped the other way—the joint would still remain the same.

Q. 30. Would you then have a nozzle?

A. You are not asking about a nozzle.

Q. 31. Would you then have a nozzle?

A. You could put a nozzle on the end just as well.

Q. 32. Then, in that case, would not the enlargement serve the same purpose that this bell-shaped enlargement does in this machine, Exhibit L?

A. It would be precisely the same, only I say that this funnel-shaped pipe is not a socket, and is not necessarily a part of the joint either.

Q. 33. Now, I ask you again: If in the upper joint in Exhibit L there was no funnel-shaped socket fitting over the ball would you have a joint?

690 A. I will answer you the same as I answered you before by stating that it does not necessarily require a funnel-shaped piece to fit over there to make a joint.

Q. 34. Does it not require a funnel-shaped piece or some equivalent of that funnel-shaped piece in order to make a joint?

A. It requires a tube or a pipe. It need not necessarily be funnel shaped or any other particular shape.

Q. 35. Then would not that tube or pipe, or whatever it is, be the equivalent of a socket?

A. No, sir; I don't consider that it is equivalent to a socket in that joint.

Q. 36. Would it be equivalent to a socket?

A. You can apply the term socket to most any——

Q. 37 (interrupting). I do not speak of the joint, Mr. Angell. I simply ask you in relation to that funnel-shaped enlargement. I want to know if some equivalent of a funnel-shaped enlargement is not necessary in a joint of that kind in order to make it a joint.

A. No, sir; that has nothing to do with the joint whatever.

Q. 38. Then, if there was not any funnel-shaped enlargement or any equivalent of a funnel-shaped enlargement fitting over that ball, you claim that you would still have a working joint?

691 A. You asked me if this was necessary to make a joint; I say it is not.

Q. 39. That or its equivalent?

A. You must have a tube of some kind. You wouldn't get a joint unless you had something to hold your water or fluid.

Q. 40. Then you have got to have that or its equivalent in connection with a ball?

A. You must have a tube or a pipe or a pipe butt that has nothing to do with the joint.

Q. 41. I ask you if it is not necessary to have that funnel-shaped enlargement or its equivalent in order to make a joint in connection — that ball?

A. That funnel-shaped enlargement or any other part of that nozzle is not a portion of that joint.

Q. 42. Will you please answer the question?

A. I will try to answer it if you will state it so that I can understand you. I will answer it. I will come as near to it as I can.

Q. 43. (Q. 41 repeated.)

A. I can't answer that question. The joint is made by the packing and not by the funnel-shaped enlargement.

Q. 44. Could you have the packing in there without the funnel-shaped enlargement or its equivalent?

692 A. Certainly. The two flanges would hold the packing, and there would be the joint without the ball-shaped enlargement or its equivalent.

Q. 45. In the model which you hold in your hand, Exhibit L, is there not a discharge pipe—a nozzle?

A. Most assuredly there is.

Q. 46 Is there not on the rear end of that discharge pipe a funnel-shaped socket?

A. Certainly; a funnel-shaped pipe. The pipe runs funnel shaped from one end to the other.

Q. 47. Does not the ball on the upper curved section of the machine fit into that funnel-shaped socket?

A. It does not fit in; it goes in. It does not touch it.

Q. 48. It goes in?

A. It goes part way in, but does not fit in.

Q. 49. But does it not move in the end of that funnel-shaped enlargement?

A. When you ask a question like that I don't know how to answer it. It does not move; it can be moved.

Q. 50. Does not that ball move in the funnel-shaped enlargement when it is fitted into and held by that?

Mr. SCRIVNER:

Q. 51. Does the ball move or does the pipe move?

A. You can move either one of them that you please in a
693 joint of that kind, but this is made to travel; the ball is stationary; for the purpose that this is made for the ball is stationary.

Mr. BOONE:

Q. 52. Then the socket moves over the ball, does it not?

A. The two move in two directions.

Q. 53. Is there not a joint made between the inside of the socket and the outside of the ball?

A. I don't term that as a socket, this joint made by this packing on the face of the ball—that is, when the pressure comes against that packing it sets the ball against the packing and makes it tight, and the harder the pressure the tighter it is. If there were not pressure enough to force that packing out it would leak. The joint is made by the ball and packing combined, and the device for holding that packing does not matter; so long as the packing is there and held there it makes the joint.

Q. 54. Is not that ball-shaped enlargement or some equivalent of it necessary in the construction of that joint?

A. I don't consider it is so.

Q. 55. Could you construct a hydraulic machine and have a ball-shaped enlargement on the upper end of the curved section, and have no funnel-shaped enlargement or any equivalent of a funnel-shaped enlargement on the rear end of the discharge pipe, 694 and still make a moving water-tight joint between the two?

A. You ask me if I could construct a hydraulic machine. I say that I am not an expert at the making of hydraulic machinery. I don't know what I could do until I tried.

Q. 56. Do you state that the funnel-shaped enlargement is not necessary, or any equivalent of it, in that joint?

A. Yes; I say it is not necessary to make a joint.

Q. 57. I am speaking of that joint in connection with a hydraulic machine. The question is, could you construct a hydraulic machine and have a ball-shaped enlargement on the upper end of the curved section and have no funnel-shaped enlargement, or any equivalent of a funnel-shaped enlargement, on the rear end of the discharge pipe and still make a moving water-tight joint between the two?

A. It seems there are half a dozen different joints in these exhibits before us.

Q. 58. Have they all got ball-shaped enlargements as a part of the joint?

A. No, sir.

Q. 59. (Q. 55 repeated.)

A. Yes; you could take the wooden box which contains these exhibits and cut a hole through the side of it and put in a 695 rubber or leather packing, with a collar or flange to hold it there, and that, with the ball-shaped enlargement, would make a water-tight joint that could be used for hydraulic purposes, and that box would not be the equivalent to the funnel-shaped socket, as you term it, although I don't consider it a socket.

Q. 60. What is the use of the funnel-shaped enlargement on the discharge pipe?

A. Simply for giving more pressure upon the nozzle by not losing the velocity of your water.

Q. 61. Is that the only use it has in the construction of that pipe?

A. Yes, sir.

Q. 62. It has no further use at all in the construction of that joint?

A. I don't consider it has.

Q. 63. Does it form any part of the joint?

A. No, sir; simply helps hold the joint together. It forms a connection to connect the joint with the nozzle.

Q. 64. Does it form any part of the joint?

A. I don't consider it does.

Q. 65. Tell me what parts form the upper joint in that machine, Exhibit L.

A. That packing and collar and the ball.

Q. 66. Could you have the packing and collar without the funnel-shaped enlargement?

696 A. Why, most assuredly. Didn't I explain to you that you could have it in that box?

Q. 67. And you claim that that box in that case answered as the equivalent of the funnel-shaped enlargement?

A. I don't think it would.

Q. 68. Does not the funnel-shaped enlargement in that discharge pipe hold the packing on that ring?

A. It helps to hold it. The ring and packing is attached in that sense to this funnel-shaped pipe.

Q. 69. Now, in case you attached that ring and packing to the side of this box would not the box serve the same purpose that the funnel-shaped enlargement does, so far as holding the packing in place over ball is concerned?

A. I suppose it would hold the packing there—would go as far as that; but as for filling the place of——

Q. 70 (interrupting). Then, so far as that is concerned, would not the box be the equivalent of the funnel-shaped enlargement?

A. In that particular it might, but for——

Q. 71 (interrupting). Now, you have got to have something to hold that packing and ring over the ball, have you not?

697 A. Something to keep that packing there.

Q. 72. But you have got to have something to hold it there.

A. Certainly you have got to have something to hold it there.

Q. 73. Then that something must be large enough to fit over the ball, must it not?

A. No; it need not necessarily have to fit over the center of the ball. It must be large enough to go over the end or a portion of the ball.

Q. 74. The ball must enter it to a certain distance, must it not?

A. Certainly.

Q. 75. Then, if the ball enters it to a certain distance in order to make that joint, would it not serve as a socket to hold so much of the ball as enters it?

A. No, sir; I don't consider it serves as a socket at all. It does not hold the ball.

Q. 76. The ball enters it, does it not?

A. Yes; the ball is held in position by them two screws on the side; it is not held by the socket. There is no socket, in the correct sense of the term.

Q. 77. Now, will you go back to your definition of a ball-and-
socket joint. You stated that a ball-and socket joint is com-
698 posed and constructed of a ball or section of a ball. Do you
find a ball or a section of a ball in the upper joint of that hydraulic machine which you hold in your hand, Exhibit L?

A. Certainly there is a ball there.

Q. 78. Then you go on and say, "and a socket that fits it." Do you find anything that fits that ball in the joint in the Exhibit L?

A. Certainly. There is a packing here that fits the ball.

Q. 79. And the packing is held in that funnel-shaped enlargement, is it not?

A. The packing is held in this joint.

Q. 80. At the end of a funnel-shaped enlargement, is it not?

A. In this case it is in the large end of the funnel-shaped pipe.

Q. 81. Then, so far as that funnel-shaped enlargement is concerned, does it not serve as the equivalent of a socket in that joint to hold the packing and to cover a portion of the ball?

A. I don't think it serves as the equivalent of a socket.

Q. 82. Does it not perform those two duties?

A. It holds the packing, but it does not hold it in the form of a socket.

Q. 83. Then, if I understand distinctly your definition of a socket, it must be something that exactly fits a corresponding ball?

A. No, sir; it need not exactly fit. It must be something
699 in which the ball is guided like a table castor. Those pins
in a table castor do not exactly fit on the bottom of a table, but still they fit there. They are held in position by the socket. If we take an upright shaft we set it in a socket or step; we need not necessarily fit it tight, but it is a socket.

Q. 84. Then a socket can be of any shape, can it not?

A. A socket can be almost of any style so long as it is used for that purpose.

Q. 85. For what purpose?

A. For a socket, for a step, for an article to set in to hold or guide it.

Q. 86. Does not the ball-shaped enlargement fit into that funnel-shaped enlargement in the upper joint in Exhibit L?

A. But it is not guided by the funnel-shaped enlargement.

Q. 87. Then your definition of a ball-and-socket joint is that the ball must necessarily be guided by the socket?

A. Yes; that is my definition to a socket, that the ball or arm that rests in the socket must be guided by the socket and not by any other means.

Q. 87½. Do you find in Exhibit L, which you have before you, a ball-shaped enlargement?

A. Certainly.

700 Q. 88. Do you find a cup-shaped enlargement?

A. No, sir.

Q. 89. You find nothing resembling a cup-shaped enlargement, do you?

A. No, sir.

Q. 90. Do you find the ball-shaped enlargement fitting into anything?

A. It fits into another packing there—another packing confined over the ball.

Q. 91. Nothing but the packing?

A. Nothing that touches the ball.

Q. 92. Is there anything fitting over the ball except the packing?

A. There is an apparatus for holding the packing.

Q. 93. What is that apparatus?

A. It consists of two large flanges and, in this case, a funnel-shaped pipe ending or terminating the nozzle, and two screws also to hold the ball from being forced back by the pressure.

Redirect-examination of H. B. ANGELL by Mr. SCRIVNER:

Q. 1. Mr. Angell, look at Exhibit B B and Exhibit L and describe the construction and operation of the upper joint in the two *in the two* machines and their differences, if any. 701

A. The result obtained is similar in each case or the same. The construction of the upper joint in Exhibit B B is a cylindrical joint. The inner cylinder fits in the outer one and is held in place by the pressure forcing the two together.

Q. 2. How is it with respect to Exhibit L; does the pressure force that joint together or apart?

A. No, sir; the pressure there has a tendency to force it apart.

Q. 3. What holds the upper curved section and the pipe together in B B?

A. That is held by a portion of a cylindrical circle or cap bolted to the pipe.

Q. 4. In the case of Exhibit L what holds it?

A. Two screws.

Q. 5. Without those screws would you have any joint at all in Exhibit L?

A. No, sir; the pressure would force the two parts asunder.

Q. 6. Whereas in Exhibit B B the tendency of the pressure is to hold them together?

A. Yes, sir.

702 Recross-examination of H. B. ANGELL by Mr. BOONE:

Q. 1. Do not the screws in Exhibit L serve as journals for the discharge pipe to move on?

A. They serve as journals or pivots; I should call them pivots.

Q. 2. Are they not actually journals, bearings for holding parts together?

A. In mechanics we don't term that a journal; we call it a pivot.

Q. 3. You call it a gudgeon?

A. No, sir; it is not a gudgeon; it is a center or pivot around which something revolves; not a journal.

Q. 4. How many motions has the discharge pipe in Exhibit L?

A. It has two.

Q. 5. What point or center does it move from ?

A. It moves from the center of those two screws.

Q. 6. How many motions of the discharge pipe do you find in Exhibit B B?

A. There is two motions.

Q. 7. The same motions as in Exhibit L?

A. Yes.

703 Q. 8. About what center does that pipe move?

A. The center of that pipe would be the center of this inside cylinder.

Q. 9. Do you find any bearings in that joint corresponding to the pivot bearings in Exhibit L?

A. No, sir.

Q. 10. Do you find any bearings at all?

A. I find the bearings upon the outer section of the cylinder.

Q. 11. Then is not the bearing on the outer section of the cylinder the equivalent of the pivot bearings, with the exception that the bearing parts are larger?

A. In one way you could say it was ; in another not.

Q. 12. Just explain what you mean by that answer.

A. In this Exhibit L the pins or centers or screws hold it rigidly in one direction and at the same point the screws hold it. In this Exhibit B B the pressure of the water holds it and nothing else in position. In other words, if you take the pressure off from the pipe on Exhibit B B the joint falls apart; there is nothing to hold in position, while in the other case the joint is held in position by those two screws or pins.

Q. 13. Is not this difference in result obtained by reversing 704 the position of the parts of the joint—that is, in Exhibit L you find the cup-shaped enlargement on the discharge pipe and a ball on the curved section, while in Exhibit B B you find a ball upon the discharge pipe and a socket on the section? Does not that difference in result occur from this fact of the reversing parts of the joint?

A. No; the difference in result occurs from their being differently constructed joints entirely.

Q. 14. Then if in Exhibit B B the semi-cylinder has been placed on the upper end of the curved section and the socket had been placed on the rear end of the discharged pipe, would not the pressure of the water tend to force them apart in the same way it does in Exhibit L?

A. In other words, if you would make it the same kind of a joint ——

Q. 15 (interrupting). Please answer the question.

A. You will have to ask the question over again.

Q. 16. If you reverse the parts of the joint in Exhibit B B—that is, place the ball-shaped enlargement on the upper end of the curved section and the socket on the rear end of the discharge pipe and then fit them together—would not the pressure of the water have the same tendency on this joint in that case that it does now on the joint in Exhibit L?

705 A. Yes; but how are you going to hold them together there; you have got no provision for holding them together; how are you going to get the water behind it unless you hold your joint together?

Q. 16½. Then suppose that we turned this machine around and that this discharge pipe in Exhibit B B was the curved section and that the curved section was the discharge pipe, that would reverse the joint, would it not?

A. No, sir; because this inner cylinder is only a section of a cylinder.

Q. 17. Then do you claim that it is impossible to reverse that joint in Exhibit B B and place the ball-shaped enlargement on the front end of the curved section and the socket on the rear end of the discharge pipe?

A. Really, I don't see how you could do it on that joint.

Q. 18. Do you, as a mechanic, consider that it is impossible to do it?

A. No, sir. I will tell you how you can do it. By continuing the inner cylinder its full circle and enlarging the pipe on the sides and bringing the water in or out at each end, then you could reverse the joint.

Q. 19. Now, suppose, Mr. Angell, that this upper end of the curved section in Exhibit L instead of being a ball were a cylinder, 706 flattened at the sides similar to the one at the end of the discharge pipe in Exhibit B B, and fitted in a socket on the rear end of the discharge pipe and was held by screws on the end of the cylinder, what would be the difference in the result between that and the upper joint on Exhibit L as now constructed?

A. The result would be that there would be a leak past each end of that cylinder; the pipe would pass right through these ends.

Q. 20. Then suppose we put a packing in, the same as there is in the joints in both these models?

A. You can't put a packing in against that cylinder; it would wear and would not remain tight.

Q. 21. It would be tight for a time, would it not?

A. You might possibly make it tight; you would have to try a great many times before you did.

Q. 22. Then you claim it would be impossible to make it tight?

A. No, sir; I don't claim that it would be impossible. I claim that it could be done after several attempts.

Q. 23. If it was done what would be the difference in result of the two joints?

707 A. The joint would then work hard—would be almost rigid.

Q. 24. What would make it work hard?

A. On account of the packing.

Q. 25. Could not the same kind of packing now used in the joint, Exhibit L, be employed?

A. No, sir; it could not.

Q. 26. Then the only benefit which the respondent gets by making the ball round is to be able to pack it a little more closely, is it, and more economically; is that true?

A. No, sir; it is not.

Q. 27. Then state what other benefits he gets by making it round.

A. The benefit is that it makes a joint that can be worked—makes a working joint.

Q. 28. Why?

A. Because it works easily and keeps tight.

Q. 29. Now, answer my question again. The only benefit which the respondent gets by making the ball round is to be able to pack it a little more closely and more economically?

A. I don't consider it so. You ask me if that is not all the advantage that that joint can be more cheaply and easily made?

Q. 30. And kept tight more economically?

708 A. I say not; that there is still another advantage; that the joint is more easily moved; more susceptible of being handled; more flexible; more under the will of the operator.

Q. 31. Then I will ask you a further question. Then the only benefits which the respondent obtains from making the enlargement on the upper end of that curved section round instead of semi-cylindrical is the economy in packing and the ease in the movement of the joint; is that true?

A. I don't hardly know how to answer your question. You put a question in such a way that it is almost impossible to get at your meaning.

Q. 32. You claim to be a mechanical expert?

A. I am a mechanical expert. I can construct almost any machine that you can bring on. If you ask me a question in a way that I understand it I will do my best to answer it.

Q. 33. I claim that the question is properly stated. I will repeat it. Then the only benefit which the respondent obtains from making the enlargement on the upper end of the curved section round instead of semi-cylindrical is the economy in packing and the ease in the movement of the joint?

A. And in its durability. What I mean by that is that it requires less repairs and is more durable.

709 Mr. SCRIVNER:

Q. 34. Is not this a difference, that one joint is practicable and the other would not be?

A. Yes; the semi-cylindrical joint with a packing in there could not be kept tight.

Mr. BOONE:

Q. 35. Did you ever use one of those machines?

A. No, sir; but I have used a great many machines.

Q. 36. Did you ever use a hydraulic machine.

A. No, sir.

Q. 37. How do you know that it could not be kept tight?

A. I know by using a great many other joints.

Q. 38. Then you claim that you could not, as a mechanic, construct a practicable joint by using a semi-cylinder in that place?

A. Not so that it would remain tight; no, sir.

Q. 39. Remain tight how long, do you mean?

A. A reasonable length of time.

Q. 40. Then the only difficulty would be in having it well packed, would it not?

A. You can't keep it well packed.

Q. 41. You consider that it is a mechanical impossibility to pack and keep it packed tight?

710 A. Yes; you can put in any style of packing you please in a joint like that on Exhibit B B, and some portions of that packing will be more firm than the other portions. So you take leather and some parts of it would have more body to it than the other parts, and the joint would not be tight, and it would leak and would get worse and worse until there was no joint there.

Q. 42. Then you give it as your opinion, as a mechanic of thirty or forty years standing, that a joint of that kind could not be packed tight?

A. It couldn't be packed tight and kept tight.

Q. 43. Could it not be kept tight so as to be a practically working joint?

A. I think not.

Q. 44. You don't know, though?

A. I am satisfied that it could not.

Q. 45. And you form your judgment from your knowledge of those joints and not from your knowledge of this joint?

A. Yes; from the same style of joints.

Q. 46. Did you ever see made a joint of the style of that on Exhibit B B?

A. Yes.

Q. 47. Where?

A. On steam boilers and in different places.

711 Q. 48. Was it a practical joint?

A. No, sir.

(Respondent- rests.)

(By agreement of counsel the reading of the above depositions to the respective witnesses and the signing thereof by them are waived.)

712 MONDAY, *January* 3, 1884.

Present: Mr. Boone, of counsel for complainant-.

Counsel for respondent- not being in attendance, a further continuance is taken until to-morrow, 4th instant, at 2 o'clock p. m.

TUESDAY, *January* 4, 1881.

Present: Mr. Boone, of counsel for complainant-; Mr. Scrivner, of counsel for respondent-.

Deposition of J. M. Stockman.

Examination-in-chief of JOHN M. STOCKMAN (a witness on behalf of complainant- in rebuttal) by Mr. BOONE:

Q. 1. State your name, age, place of residence, and occupation.

A. Name, John M. Stockman; forty-two years old; I reside in San Francisco, and my occupation is engineer and draughtsman.

Q. 2. Where are you employed?

A. At W. T. Garratt's brass foundry.

Q. 3. How long have you been engaged in the business of mechanical engineer and draughtsman, Mr. Stockman?

713 A. Strictly as that about four years. As mechanic and engineer—I was educated as an engineer—twenty-two years.

Q. 4. Are you familiar with the mechanical construction and arrangement of the different kinds of joints used in mechanics?

A. Yes, sir.

Q. 5. Take the model, Complainants' Exhibit B B, and describe that upper joint, its operation, and construction.

Obj. (Objected to by respondent- as not rebuttal.)

A. This is a socket joint, moving vertically, controlled by a lever and ratchet; it is a ground joint evidently, fitted by grinding the surfaces together for the purpose of making them tight.

Q. 6. How many motions has that joint?

Obj. (The same objection.)

A. Only one.

Q. 7. Now take the model, Exhibit L, and state whether there it any difference, and, if so, what difference, between the upper joins in that model and the upper joint in the model, Exhibit B B.

A. There is a difference in the construction of the joint, but no difference in its action. This joint (on Exhibit L) has one motion, the same as the other joint, which is vertical. This (upper joint on Exhibit L) evidently is not controlled by any ratchet appliance, as the upper joint in Exhibit B B is. In this joint (on Exhibit
714 L), however, these parts are reversed, the pressure of the water
being allowed to work in an opposite direction from the other joint. When the pressure of the water is admitted here (referring to upper joint on Exhibit L) the action is the opposite from the other model, having a tendency, perhaps, to make it work easier or looser than the joint in Exhibit B B. The action of the pressure is a direct pressure on the ground joint in Exhibit B B, forcing it to its seat, making it tight. The action of the water in Exhibit L is to force the pipe backwards upon the seat of the pivot.

Q. 8. In both those joints, then, the pressure of the water has a tendency to make the joints tight, has it?

Obj. (Objected to by respondent- as irrelevant and immaterial and not rebuttal, being a part of the original case of the complainant-.)

A. It does.

Q. 9. In your opinion, Mr. Stockman, if the upper joint in Complainants' Exhibit B B was in use would it require any invention for a mechanic skilled in the art to construct the upper joint represented in Exhibit L?

Obj. (The same objection.)

A. No, sir; I think not.

Q. 10. In your opinion, would it make any difference whether in
Exhibit B B the ball-shaped enlargement shown on the rear
715 end of the discharge pipe was placed upon the upper end of
the curved section and the socket which is now shown on the
upper end of the curved section placed on the rear end of the discharge pipe?

Obj. (The same objection.)

A. Would it make any difference what is the action or effect?

A. No, sir; it would not.

Q. 11. Would there be any mechanical difficulty encountered in making that reversal of the parts?

Obj. (The same objection.)

A. No, sir; it can be made one way as well as the other; it won't make any difference.

Q. 12. What difference would it make, Mr. Stockman, whether the pivot bearings in Complainants' Exhibit B B were made on the outer ends of the cylindrical-shaped enlargement or whether they were made smaller, so as to serve as simple pivots?

Obj. (The same objection.)

A. No difference at all?

Q. 13. In your opinion, would it require any invention for a person skilled in the art to reduce that bearing in the manner which I have just stated?

Obj. (The same objection.)

A. No, sir; it would only be a mechanical substitute which any
man might try. I don't think it would require any invention to
do it; it would be a matter that would be well known to any
716 skilled mechanic, and that he might try.

Q. 14. Do not the discharge pipes in both these machines represented by the models, Exhibits L and B B, move about a fixed center in raising and lowering?

Obj. (The same objection.)

A. Yes; there is a center there that they move on, of course. The center of the upper joint in Exhibit B B becomes fixed upon the pressure of the water being applied.

Ex. F F.

(Complainant- puts in evidence a model of a curved section stated by counsel to have been made to represents the joints of complainants' and respondents' machines, one upon each end of the section, marked Complainants' Exhibit F F.)

Obj. (Objected to by repondent- as not rebuttal and as irrelevant and immaterial.)

A. Yes, sir.

Cross-examination of John M. Stockman by Mr. Scrivner:

Q. 1. Looking at the model, Complainants' Exhibit F F, I will ask you, as a mechanical engineer, whether you ever saw any 717 joints of the character of either of those there represented?

A. The upper joint on Exhibit L is like the joint on the globular end of Exhibit F F.

Q. 2. Did you ever see a joint like the other joint represented on Exhibit F F?

A. That upper joint in the model, Exhibit B B, is substantially the same thing.

Q. 3. What do you mean by substantially; is there not a difference in their construction?

A. Yes.

Q. 4. Did you ever see a joint constructed like the joint on the cylindrical end of Exhibit F F?

A. I think I have; yes, sir.

Q. 5. Where?

A. Here it is, here (the upper joint on Exhibit B B).

Q. 6. But you have just stated that that upper joint was differently constructed from this joint on the cylindrical end of Exhibit F F. Did you ever see a joint constructed like that on the cylindrical end of Exhibit F F?

A. Yes.

Q. 7. Where?

A. A joint is constructed like that on a rotary engine?

Q. 8. For how long have you known such joints to be used on rotary engines?

A. They are about as old as the rotary engine itself—well, 718 no, I can't say that. I don't know how long.

Q. 9. For twenty years?

A. I don't know as twenty years, probably ten years.

Q. 10. To the best of your knowledge, you have seen joints of that kind on rotary engines for ten years?

A. Yes; they are not used for that purpose, of course.

Q. 11. But, to the best of your recollection, you have known of joints constructed like that on the cylindrical end of Exhibit F F to be used on rotary engines for ten years?

A. I think I have; yes, sir.

Q. 12. Do you say there is no substantial difference between that joint on the cylindrical end of Exhibit F F and the upper joint on Exhibit B B?

A. There is not, with this exception; this joint on Exhibit F F is on a pivot and this on Exhibit B B is on a pivot when it becomes fixed by the pressure of the water.

Q. 13. You say that those two joints last referred to are substantially the same?

A. Yes, sir.

Q. 14. And that you have known joints like that on the cylindrical end of Exhibit F F to be used on rotary engines for ten years?

A. Yes; like that, with one exception.

719 Q. 15. Then the joints that you have seen on the rotary engine is not the same as that on the cylindrical end of Exhibit F F, is it?

A. Well, it is operated for a different function in some respects.

Q. 19. But the joint is made like that?

A. Yes, sir.

Q. 17. And that joint referred to is the same as that on Exhibit B B?

A. Yes, sir.

Q. 18. Now, if a man had seen that joint on rotary engines, would there be any invention in taking that joint out of a rotary engine and putting it into a hydraulic machine?

A. There would be for that construction.

Q. 19. What would be the invention?

A. The invention would be for the purpose to which it was applied.

Q. 20. There would be no invention, so far as manufacturing the joint is concerned, you say, but the invention comes in in taking this joint and applying it to a hydraulic machine?

A. That is it.

Q. 21. The discovery, then, that this man made comes in in discovering a new purpose for that joint; is that it? Does the discovery or the invention of the patentee in this case consist in appropriating this joint from the rotary engine to a hydraulic machine?

720 A. I don't know as I am able to say what the invention would be, so far as that is concerned.

Q. 22. Give me your opinion on that as an expert?

A. My opinion is that if a man took this joint (on the cylindrical end of Exhibit F F) and applied it to a hydraulic nozzle in the manner in which it is applied in Exhibit B B he only used a portion of the joint on the rotary engine and it is applied for a different purpose and is an invention.

Q. 23. What is the invention?

A. The application.

Q. 24. The application of the old joint to a new purpose, is it not?

A. I suppose so.

Q. 25. You said awhile ago *ago* that the difference between the upper joint in Exhibit B B and the upper joint in Exhibit L was simply a difference in construction?

A. Yes.

Q. 26. What is the difference in their construction?

A. This (referring to the upper joint on Exhibit L) is a globe and this (referring to the upper joint on Exhibit B B) is a cylinder.

Q. 27. You state also that there is a difference in action. Is not one difference in their action that when the joint in Exhibit B B is subjected to the pressure of the water it becomes tight by reason of the forcing of the parts of the joint together?

721 A. Yes.

Q. 28. And when the pressure of the water is off the joint is loose?

A. Yes, sir.

Q. 29. Now, in the case of the upper joint on Exhibit L, when the water is put on, what is the effect upon the parts; are they forced together or apart?

A. They are forced together in an opposite direction from the other.

Q. 30. Just explain how the parts are forced together when the pressure of the water is applied to the upper joint in Exhibit L.

A. When the water passes into the pipe then the packing is forced in an opposite direction back against the globe.

Q. 31. But you do not mean by that that the funnel-shaped enlargement is forced back upon the ball, do you?

A. No, sir; I did not mean that

Q. 32. The nozzle with its funnel-shaped enlargement, the pressure of the water tends to force that off from the ball, does it not?

A. No; it does not do that because it is fixed on the pivot.

Q. 33. But if you take the pivots off, what becomes of it?

722 A. Then it is not like that model, if you take the pivots off. If you took the pivots off the water would force it off, I presume.

Q. 34. Don't you know that it would?

A. Yes; I haven't any doubt about that.

Q. 35. If I understood your theory with regard to all these models, Exhibits B B, L, and F F, looking at the joint shown on the cylindrical end of Exhibit F F and the upper joint on the other exhibits, your theory is that they all act upon the same principle?

A. Yes, sir.

Q. 36. The action of the three joints is the same?

A. Yes, sir.

Q. 37. Their operation is the same?

A. Yes, sir; the construction is different from the fact of one being a cylinder and the other being a globe.

Q. 38. They are very different in the form of construction of the three joints?

A. That is all, sir.

Q. 39. Not different in their operation?

A. No, sir; excepting as I told you.

Q. 40. You have known a joint like that on the cylindrical end of Exhibit F F to be used on rotary engines for the last ten years about?

A. I modified that to this extent; that this (on the cylindrical end of Exhibit F F) would not be the complete joint that was on a rotary engine. There is a portion of that joint; it is not the same thing exactly.

723 Q. 41. What is the difference between that joint which you have seen used on a rotary engine and this joint on the cylindrical end of Exhibit F F?

A. The difference is not that the joint on the rotary engine is provided with a cut off — has more to it.

Q. 42. I asked you awhile ago if you had ever seen a joint like that on the cylindrical end of this model, Exhibit F F, anywhere, and you said you had; is that correct?

A. I will say this then: I said yes and I intended to mean this: That I had seen a joint formed in the same way as that over a cylindrical surface and from an opening playing backwards and forwards, but I did not mean to say that I have seen a joint used for this purpose whatever. I meant to say that I have seen a similar joint used in a rotary engine, but this (on the cylindrical end of Exhibit F F) would only be a portion of the joint anyway; that is what I meant to say exactly.

Q. 43. But, so far as the joint alone is concerned, it is the same joint, is it?

A. Yes; it works on a cylindrical surface.

Q. 44. Then the operation of that joint in the rotary engine that you speak of would be the same as the operation of the joint in Exhibit B B, would it not?

A. No, sir; it would not.

724 Q. 45. Now, you say that the two are not constructed alike—that is, the joint on the cylindrical end of Exhibit F F and the joint in Exhibit B B?

A. I didn't say that.

Q. 46. Would the joint on the cylindrical end of the model, Exhibit F F, and the upper joint in Exhibit B B — constructed alike?

A. They are.

Q. 47. Do they operate alike?

A. They do.

Redirect examination of JOHN M. STOCKMAN by Mr. BOONE:

Q. 1. On the joint which you saw on a rotary engine was the cylindrical enlargement placed on the end of a discharge pipe?

A. No, sir.

Q. 2. Then you had reference to the simple motion of the joint—the moving parts—did you?

A. That is just what I wanted to convey all the time.

Q. 3. Then supposing that this joint had been used in the rotary engine for a particular purpose, in your opinion would it require any invention to combine it with the discharge pipe and 725 curved section of a hydraulic machine in the manner in which the complainant has combined it?

A. I said it would.

Q. 4. Then, if I understand you, complainant, having combined the parts of the joint with the curved section and discharge pipe, it would not require any invention to supply a ball-shaped enlargement and a corresponding cup-shaped socket to receive the ball?

A. No, sir; I think not; I said so before; that is a well-known mechanical appliance.

Q. 5. In both of these machines you state that the pressure of the water makes a water-tight joint. Is that so?

Obj. (Objected to by respondent- as irrelevant and immaterial and not rebuttal.)

A. Yes.

Q. 6. In the respondents' machine, represented by the model, Exhibit L, the pressure of the water against the packing must be sufficient to make a water-tight joint, must it not?

A. Certainly, else there would be a leakage all around the joint, of course, the same as there would be here (in the upper joint of Exhibit B B).

Recross-examination by Mr. Scrivner:

726 Q. 1. What makes the upper joint in Exhibit L; the packing forced against the ball or the funnel-shaped enlargement of the nozzle forced against the ball?

A. It is the packing.

Q. 2. It is the packing in the funnel-shaped enlargement in combination with the ball-shaped enlargement which forms the joint?

A. Yes, sir.

Q. 3. Assuming that the cylindrical joint shown on the end of the model Exhibit F F was known to mechanics, as you say it was, that the discharge pipe shown on the model Exhibit B B was known, and that the upper curved section on Exhibit B B was also known, where would be the invention of putting them together?

A. It would be in the combination for the purpose.

Q. 4. Do you say, as a mechanic of twenty years' experience, that if these things were laid before you, as I said in the previous question, all known in mechanics, that you would not know, as a mechanic, how to put them together in a hydraulic machine?

A. Do you mean if they were laid before me constructed?

Q. 5. My question is, as a mechanic of twenty years' experience, knowing of the existence of the joint on the cylindrical end of the model Exhibit F F, being also familiar with the existence of the upper curved section of Exhibit B B and knowing how to make it, and being also acquainted with the existence of the discharge pipe of Exhibit B B and knowing how to make it, could you, as a mechanic, put those things into a machine? 727

A. Certainly I could.

Q. 6. Then where is the invention?

A. I don't know how to answer such a question.

Redirect examination by Mr. Boone:

Q. 1. If the cylindrical joint shown on the model, Exhibit F F, was in common use on a rotary engine, would its use in that relation suggest its use in connection with a hydraulic machine?

A. I doubt very much if it would; it might and might not. I doubt it very much.

Q. 2. If it required changes in construction in order to adopt it for the purpose, would it then be suggested by its use on the rotary engine?

A. I doubt if it would.

Q. 3. Is there any change or adaptation required in order to employ it in connection with the discharge pipe and curved
728 section different from what is used in connection with it in a rotary engine?

A. Yes, sir.

Q. 4. Then where you take two or more old devices and adapt them to one and*d*other and connect them together so as to produce a result, would you call that an invention?

A. I would; yes, sir.

Q. 5. How many methods of making the meeting surfaces with metallic joints water-tight are there known to mechanics?

Obj. (Objected to by respondent- as irrelevant, immaterial, and not rebuttal.)

A. Two methods—ground joints and packing.

Q. 6. Then, if a ground joint was known, would it require any invention to make that joint tight by packing?

A. I should think not; it is too common a thing.

Q. 7. If the upper joint in Complainants' Exhibit B B were reversed—that is, the ball shaped enlargement placed on the upper end of the curved section, and the receiving socket on the rear end of the discharge pipe, would you, as a mechanic, find any difficulty in packing that joint so as to make it water-tight?

A. No, sir; I would simply put some packing into it.

729 Recross-examination by Mr. Scrivner:

Q. 1. If I understand you, your theory with regard to the cylindrical joint shown on the model, Exhibit F F, and the upper joint on the model, Exhibit B B, it is that the inventor took the cylindrical joint shown in the model, Exhibit F F, changed its construction, and applied it to these hydraulic machines; is that it?

Mr. Boone: You mistake the proposition; that was not said by the witness.

A. I don't know whether it is or not.

Mr. Scrivner:

Q. 2. What is it, then?

A. I say this, as I have said before, that the construction of this joint on the cylindrical end of Exhibit B B is similar to the joints used on rotary engines, and then I told you it is not exactly the same.

Q. 3. Then the inventor changed it when he put it into a hydraulic machine, did he not?

A. I don't know whether he changed it from that or not; I don't know where he got his idea from; it is changed, yes.

Q. 4. He changed the construction of that class of joints?

A. The action of the joint is not the same, as I have said 730 before; that on the rotary engine there is a difference both in the construction and operation.

Q. 5. Then these joints referred to are not alike?

A. I said it was similar; they are alike to this extent, that both work upon a cylindrical surface.

Q. 6. This model, Exhibit F F, was put in evidence, as I understand it, in part to show a similarity between all these joints. Does it show a similarity between these three joints—that is, the cylindrical joint on Exhibit B B and the upper joints on Exhibits B B and L?

A. Yes, sir.

Q. 7. Is there a greater difference between the cylindrical joint on Exhibit F F and the upper joint on Exhibit B B?

A. The upper joint on Exhibit B B is more like the cylindrical joint on Exhibit F F than the upper joint on Exhibit L is.

Q. 8. You say that the upper joint on Exhibit B B is more like the cylindrical joint in the model, Exhibit F F, than the upper joint in Exhibit — is like this joint in the model F F referred to. Now, the difference between the cylindrical joint in the model, Exhibit F F, and the upper joint in the model, Exhibit B B, is a difference in construction, is it not?

A. Yes; very little difference.

Mr. Boone:

731 Q. 9. If one of these joints was known would it require any invention to construct either of the others—that is, does the difference in construction between any two of these joints involve invention?

A. No, sir; it does not.

Deposition of Frank H. Fisher.

Re-examination of Frank H. Fisher (on behalf of complainant- in rebuttal) by Mr. Boone:

Q. 1. What difference is there between the upper joint on your machine and the Allenwood canvas section in construction and operation?

A. The upper joint of the model B B is a metallic joint and has a vertical motion only, while in the Allenwood it is a flexible joint of canvas that has a universal motion.

Q. 2. Then the improvement which you made upon the Allenwood machine was to prevent it from having a side motion and to make a close moving metallic joint that had only one direction of motion?

732 A. That is it. Another object was to get a machine that you could handle and manage a large stream of water with.

Q. 3. What feature in the Allenwood flexible joint rendered it difficult to handle a large stream of water?

A. The canvas hose.

Q. 4. What feature in the canvas hose?

A. When the pressure of the water was on they had to take hold out on the end of the pipe in order to handle it and give it either a motion up and down or sideways, and in making a turn with the canvas hose it would kink up and whirl round; wasn't manageable.

Q. 5. I will ask you if the joint represented in the cylindrical end of Exhibit F F is a substantial representation of your upper joint?

A. It is. The pieces and parts are identically the same.

Q. 6. Is the ball-shaped joint on the other end of the model, Exhibit F F, a fair representation of the respondents' joint?

A. It is; identical.

Q. 67. In the cylindrical joint on Exhibit F F the socket portion is held upon the cylindrical portion by pivots. Is that the same as in the joint in your hydraulic machine?

733 A. The parts of that joint are reversed in the model Exhibit F F and the pivot made a little smaller.

Q. 8. Is there any mechanical difficulty or other difficulty in reversing the parts in your joint and making them operate in a hydraulic machine?

A. None whatever.

Q. 9. Is there any difficulty in packing the joint when thus reversed in order to make it operative?

A. None.

Q. 10. Do you find in any of the joints invented prior to the date of your application for a patent, and here in evidence, any joint which is constructed in the same manner or which performs the same duty as the upper joint in your machine?

A. I do not.

Q. 11. In any of those machines represented by the models in this case, and claimed to have been invented and manufactured prior to your invention, is there any machine in which the water passes, directed in a solid body from the main pipe, in and through the hydraulic machine and its joints, in which there is a horizontal lower joint and an upper metallic joint, which has only a vertical motion?

A. No.

734 Q. 12. Were you enabled to produce this result of conveying the water from the main pipe in and through the machine and directing it up and down and in any direction in a circle by the application of a metallic joint pivot*t*ed at each side, as represented in your model, Exhibit B B?

A. Yes; I was.

Q. 13. Did that construction overcome the difficulty which had been previously encountered in the use of two-jointed machines for this purpose?

A. It did; it is perfect in operation.

Q. 14. Does this application of a joint involve and require the combination of an enlargement fitting into a corresponding socket applied respectively to the rear end of the discharge pipe and the upper end of the curved section?

A. It does.

Cross-examination of FRANK H. FISHER by Mr. SCRIVENER:

Q. 1. I understood you to say that the cylindrical joint shown on the model Exhibit F F in all its parts and construction is like your upper joint in Exhibit B B?

A. All of its parts are the same as mine in the upper joint in Exhibit B B.

735 Q. 2. Does it operate the same way?

A. The movement of the joint is the same.

Q. 3. What is the difference, if any, between that joint in Exhibit F F referred to and yours?

A. The parts of the joint are reversed.

Q. 4. It is simply a difference in construction, is it not?

A. The construction is the same, only it is put together differently—that is, the enlargements on the discharge pipe on Exhibit B B moves while the cylindrical joint in Exhibit F F is stationary.

Q. 5. Is the difference between the upper joint in the model Exhibit B B, and the cylindrical joint in this model, F F, a difference merely in the construction and operation of the two joints?

A. There is no difference in the operation of the joints. They produce the same results in the same way.

Q. 6. You did not invent or discover the upper curved section in your double-jointed machine, did you?

A. No, sir.

Q. 7. You did not invent nor discover the discharge pipe of the hydraulic machine?

A. No; I did not.

Q. 8. Then you did not invent or discover the upper joint used in your machine?

A. I never saw one before mine, nor heard of one.

736 Q. 9. Of course, if they had been in use for ten years you did not invent it?

A. I don't know whether I invented it or not. I invented the application of it.

Q. 10. But I am not talking about the joint alone. When and where was it that you saw a joint like the cylindrical joint in Exhibit F F?

A. When I first saw a joint like that was when I first made it in my original machines, of which Exhibit B B is a representation.

Q. 11. How long ago was that?

A. In 1870. I think I made it a long time before I got the patent.

Q. 12. How long before?

A. I don't know; a year, probably, before the date of the patent.

Q. 13. What is your understanding of what your invention is in that machine, Exhibit B B? It is in the construction of the upper curved section—the nozzle or the joint?

A. The construction of the joint in combination.

Q. 14. So that you may understand my meaning better, suppose that the upper curved section was known and in common use at the time you made your invention; that the discharge pipe was known and in common use, and that such a joint as the cylindrical 737 joint shown on the model, Exhibit F F, was also known and in common use, what, then, would be your invention?

A. I don't know as it was known. Well, in that case, my invention would be the combination of the parts.

Q. 15. The combination of these three old elements, assuming that they are all old?

A. It would be the combination for producing the vertical movement.

Q. 16. But I am saying that all these elements that I have named were known and in common use at the time of your making your invention. Then the invention would be in the combination of the three elements, would it not?

A. If they were all known of course my invention would be in putting these parts together.

Q. 17. I believe you have stated that you have been a mechanic for a good many years?

A. Yes, sir.

Q. 18. If that cylindrical joint in Exhibit F F was known to you, as a mechanic, and you knew how to make it and its use, and if the upper curved section in the model, Exhibit B B, was known to you, as a mechanic, and you knew how to make it and its use, and 738 if also the discharge pipe on *on* Exhibit B B was known to you as a mechanic, would there be any invention in combining those three things together so as to make a hydraulic machine?

Obj. (Objected to by complainant- on the ground that the issuance of the patent shows that there was invention.)

A. I say it would be an invention in applying those parts and putting them together and producing the result—the vertical motion, up and down.

Q. 19. Then the invention, as I understand you, would be in putting those three things together so as to produce a vertical motion?

A. Not entirely; that is one of the elements.

Q. 20. That vertical motion you did not discover, did you?

A. I did in that joint there.

Q. 21. You simply discovered how to get a vertical motion in this way?

A. Yes; with those pieces.

Q. 22. The uses of the vertical motion were known before you entered the field, were they not?

A. The uses of certain kinds of vertical motion; they were not known in a hydraulic machine.

Q. 23. Did you not get a vertical motion in the Allenwood machine?

739 A. Yes; and you would get an universal motion; I get a vertical motion only with my upper joint.

Q. 24. But the vertical motion was known in the Allenwood machine?

A. Yes; but all other motions were used in the flexible joint in the Allenwood machine; the vertical motion was not produced the same as it is in my machine; mine is a metallic joint, and that joint in the Allenwood machine is a piece of canvas hose.

Q. 25. And you reduce the motion of the flexible joint in the Allenwood machine to a single vertical motion by combining these three elements?

A. Yes. I produce that as one thing, though I make a water-tight joint also.

Q. 26. Was not the canvas-section joint in the Allenwood machine water-tight?

A. To a certain extent it was water-tight.

Q. 27. Then you made a water-tight joint out of that, did you not?

A. Yes. I made a good deal better water-tight joint than that.

Q. 28. Why is your water-tight joint any better than his water-tight joint, so far as being water-tight is concerned?

A. It is better in a good many respects, because you can handle it better.

740 Q. 29. I have reference simply to its being water-tight. So far as that is concerned, whether it is water-tight or not, is not one joint as good as the other?

A. His joint would not wear like a metallic joint.

Q. 30. Then your metallic water-tight joint is superior to the Allenwood canvas water-tight joint because it wears better and handles better?

A. No; the first place, I don't admit that the Allenwood is a joint any more than a piece of lead pipe is.

Q. 31. (Q. 30 repeated.)

A. Yes; because it is superior in every respect.

Q. 32. Then your invention consisted in substituting a metallic joint, such as that shown on the cylindrical end of the model, Exhibit F F, in place of the Allenwood canvas section, is it?

A. That is a part of the invention.

Q. 33. What is the other part?

A. A part of the invention is a combination of joints—a horizontal and vertical joint.

(Testimony closed.)

(Testimony reopened by stipulation filed.)

741 SATURDAY, *January* 29, 1881.

Present: Mr. Boone, solicitor for complainant-; Mr. Scrivner, solicitor for respondent-.

Deposition of J. M. Stockman.

Re-examination of JOHN M. STOCKMAN (on behalf of complainant- in rebuttal) by Mr. BOONE:

Q. 1. In your testimony the other day you spoke about a valve on a rotary engine. Please describe that valve.

A. Did I say a rotary engine?

Q. 2. I believe you did.

A. I should have said an oscillating engine; but then the valves are all the same, so far as that is concerned. I wish to correct that, if I said rotary engine, as I intended to say an oscillating engine.

Q. 3. Then on what part of the oscillating engine was that valve that you refer to?

A. On the trunnions.

Q. 4. Is that a valve, or is it a joint?

A. It is a joint—one part working over the other on a circular face.

Q. 5. What was its object?

742 A. To admit and discharge steam and keep the joint tight—to make the joint.

Q. 6. Then was it not a valve?

A. A part of the valve; yes. It performed the office of a valve.

Q. 7. Did it have any central pivots about which it operated?

A. No, sir; not a pivot. It is operated on a periphery.

Q. 8. The whole face of the circular cylinder moved against a corresponding concave face, did it not?

A. Yes, sir; concave and convex faces moving together.

Q. 9. Could that valve or joint, whichever you might call it, have been applied in connection with a hydraulic machine in the relation shown in either the complainants' or respondents' machines without adaptation or change?

A. No, sir; it could not—not without necessary change.

Q. 10. Was there anything in the construction, location, or operation of that valve which would have suggested its use in the connection in which the complainant uses it in his hydraulic machine?

A. Nothing more than —, and that is what I intended to convey the other day. I don't know as I made it clear—that the 743 joint in the hydraulic machine so far as its being cylindrical in shape and working on a convex and concave surface is the same thing; otherwise not. That is what I intended to convey.

Q. 11. Such a valve as that which you have referred to is used on all oscillating engines, is it?

A. That or a modification of the same thing—a valve the same in principle.

Q. 12. It is the valve that admits steam to the cylinder of the engine?

A. Yes, sir.

Q. 13. Then it is what you would call a rotary steam valve, is it?

A. Yes; it comes as near a rotary disk valve as anything you can get hold of.

Recross-examination by Mr. SCRIVNER:

Q. 1. How long have these rotary disk valves been in use?

A. I don't know as I can tell you.

Q. 2. How long have you known oscillating engines?

A. Ever since I was an apprentice; at least twenty-five years or more.

Q. 3. Did they have these rotary disk valves, or such as that which you have been describing, on oscillating engines when you first knew them?

744 A. Yes, sir.

(Continued until Monday, 31st instant, at 2 o'clock p. m.)

MONDAY, *January* 31, 1881.

(Further continued by consent until Saturday, February 5th, at 2 o'clock p. m.

745 SATURDAY, *February* 5, 1881.

Present: Mr. Boone, solicitor for complainant-; Mr. Scrivner, solicitor for respondent-.

Deposition of W. W. Hanscom.

Examination-in-chief of WILLIAM WALLACE HANSCOM (a witness on behalf of complainant- in rebuttal) by Mr. BOONE:

Q. 1. State your name, age, place of residence, and occupation.

A. My name is W. W. Hanscom; my age, nearly forty-two years; my place of residence, 612 O'Farrell street, San Francisco, and my occupation, mechanical engineer.

Q. 2. How long have you been engaged in the business of mechanical engineer?

A. Since I first commenced learning the business it is about twenty-six years.

Q. 3. Are you familiar with mechanics and the construction of different kinds of machinery?

A. Yes, sir.

Q. 4. You have had practical experience in the construction of machinery, have you?

A. Yes, sir.

746 Q. 5. Please examine the models, Exhibits B B and L, and state what difference you find in *in* the construction of the front or upper joint in the two machines.

A. This (upper joint on Exhibit L) seems to be a portion of an ordinary ball-and-socket joint, as it is termed. It is held from moving in more than one direction by the two pins or pivots. The joint portion is packed with leather—seems to be what we call an ordinary hydraulic packing—which is kept tight by the pressure of the water, while the joint on Exhibit B B referred to is kept tight by the two surfaces coming in contact, forming what is usually called a surface joint, the pressure of the water keeping these two surfaces in contact. I don't know exactly what name I should give this joint (on Exhibit B B); it seems to be more like the action of a key in a faucet or a faucet joint, with the exception that in a faucet joint there is a screw for keeping the key in its place, while in this the pressure of the water keeps the surfaces in contact.

Q. 6. What difference do you find in the mechanical construction of the two joints referred to?

A. In the construction of that joint (on Exhibit L) the surface of that portion of the joint which is on the curved section is turned off in a circular shape, while this (portion of the upper joint on Exhibit B B, on the curved section) is turned off in a circular form.

747 Q. 7. What is the difference in the operation of the two joints?

A. So far as the action in moving the joints the results of them are very similar, so far as that is concerned; they have a motion in one direction only.

Q. 8. In your opinion, would one of these joints be the mechanical equivalent of the other?

A. Yes; I should say it would, although they are not made just in the same form. What I consider a mechanical equivalent is one machine that will do the same work as another, taking it broadly, although it may not be constructed in just the same way; if it is doing the same work in substantially the same manner it is a mechanical equivalent.

Q. 9. Now take Exhibit J and compare the upper joint on that model with the two joints of which we have just been speaking.

A. I should hardly consider that (flexible joint on Exhibit J) a mechanical equivalent; I would call it a substitute for a joint, but I should hardly consider it a joint.

Q. 10. Would you consider it the mechanical equivalent of either of the metallic joints which you have been speaking about?

A. No; I should not.

Q. 11. What result, if any, does the metallic joint produce
748 which the upper joint in Exhibit J does not produce?

A. These metallic joints have the movement limited to one direction, while this (flexible joint on Exhibit J) has a movement in all directions; it is free to move in all directions.

Q. 12. Are these joints represented by the upper joints in Exhibits L and B B ordinary mechanical joints as used in mechanics?

A. About this joint on Exhibit B B, I don't know that I recollect just at present time that I have seen any made just like this for this purpose. The portion of this joint (on Exhibit L) that I have seen is a part of a ball-and-socket joint, usually termed.

Q. 13. Does it make any difference whether the enlargement is circular or cylindrical in shape, so far as the practical operation of the joint is concerned?

Q. Generally, I should think not; there may be some circumstances that would require one different from the other.

Q. 14. Do you see any circumstances in connection with the use to which the joints are placed in this machine which would make one not the equivalent of the other?

A. No; not that would make one not the equivalent for the other. There may be cases where you are using different fluids running through here where, perhaps, it may be better to have a 749 soft packing rather than the metallic surfaces coming in contact.

Q. 15. How would it be in the case of simple water pressure, where the pressure was very great?

A. I don't know that there would be any material difference. There may be if there is an extreme pressure and the surfaces of this (upper joint on Exhibit B B) are not proportioned sufficiently large to bear the unit of strain. For instance, taking metallic surfaces coming in contact, we know from experience that they will bear so much pressure per square inch without cutting—that is, we can keep a lubricant in them, which may be any fluid, either water or anything else, but beyond a certain pressure, established by experience of various kinds of materials and under different circumstances, the surfaces would be required to be made larger or less so as to reduce the pressure for a unit of surface.

Q. 16. You have had considerable experience in connection with patents, have you not?

A. I don't know that I can say that I have had considerable. I have taken out two or three patents. I have made applications for patents during a period of twenty-five years.

Q. 17. You understand what is meant by the term invention, do you not?

A. I understand it to be something which is novel and useful.

750 Q. 18. Now, supposing that Exhibit J should represent the only style of hydraulic machine that was in existence, would you consider it invention to construct a machine similar to Exhibit B B, having the upper joint shown in that model instead of the canvas section shown in Exhibit J?

A. Yes, sir.

Q. 19. Then supposing that a hydraulic machine constructed in all essential particulars like Exhibit B B was in existence, would it, in your opinion, require invention to construct a machine similar to Exhibit L?

A. No, sir; I should not, with my present knowledge.

Q. 20. Do both of the joints referred to in Exhibit- L and B B show an e-largement fitting into a corresponding socket?

A. They do.

Q. 21. Do either of these joints perform any duty in the hydraulic machine which the other does not?

A. Yes; unless the leather is considered a portion of this joint in Exhibit L. I mean by that that this (upper joint in Exhibit B B) packs itself, while that (upper joint in Exhibit L) depends on the packing that is inside. But as far as the use of the joints is concerned, all the direction of their movements, I consider one is the same as the other.

751 Q. 22. Are not both of these styles of packing well known in mechanics?

A. The metallic joint and leather packing, yes.

Q. 23. Could it be possible to make the joint in Exhibit L practically tight without the use of a packing similar to that shown in the model?

A. It could be done by changing this joint in Exhibit L.

Q. 24. Then it is the relation which the parts bear to each other which renders the soft packing necessary, is it?

A. Yes, sir.

Q. 25. Now, do you find in the upper joint in Exhibit B B any equivalent for the pivots used in the upper joint of Exhibit L?

A. Yes; I consider this cylindrical section of the tube (on Exhibit B B) the equivalent of the pivots in the other joint.

Q. 26. I will ask you if the joints represented on the opposite ends of Complainants' Exhibit F F substantially represent the two metallic joints which you have been examining?

A. No; I don't consider them substantially the same, so far as the packing is concerned.

Q. 27. Is that the only difference which you find?

A. The cylindrical joint in Exhibit F F is not the same as the
cylindrical joint in Exhibit B B; the surfaces of the joint are
752 metallic while in Exhibit F F they are soft material. I
understand that the pressure in the joint Exhibit F F keeps the surfaces in contact, so that it is not what we call a surface joint, does not depend upon the metallic surfaces, but upon this soft packing.

Q. 28. Then the joint on Exhibit F F, which you are talking about, represents the joint referred to on Exhibit B B, only it is reversed—that is, the enlargement is made on the curved section in the joint in Exhibit F F while the socket is on the end of the discharge pipe, which arrangement is reversed in the other joint referred to; is that so?

A. That is one of the differences. The other difference is that in the other joint in Exhibit F F the packing is all done by additional material that is put in between the parts of the joint while in Exhibit B B the metal surfaces in contact are the joint.

Q. 29. Would you consider the cylindrical joint on Exhibit F F a practically-working joint?

A. Certainly; just as much as I would the spherical joint on Exhibit L.

Q. 30. Now, compare that joint in Exhibit F F referred to with the spherical joint on Exhibit L and please state what differences you find in the construction of the two joints.

753 A. The difference practically is that this portion of the joint on F F is cylindrical, while on L it is spherical.

Q. 31. Would that make any difference in the operation of the joints?

A. I don't see that it would — any—not so far as joint is concerned; whether there would be any difference in fact by the construction of the openings is another question.

Q. 32. Would you call the cylindrical joint on Exhibit F F a species of ball-and-socket joint or not?

A. Well, no; not as it is generally termed. We generally al-ude to ball-and-socket joints as spherical joints or portions of spheres. When I speak of a ball-and-socket joint or any one speaks to me of a ball-and-socket joint something of a spherical shape comes into my mind; that is the natural association.

Q. 33. Is not the cylinder the equivalent of the ball in Exhibit L in this case?

A. Yes.

Q. 34. Is not the socket in that case the equivalent of the socket in Exhibit L?

A. Yes.

Q. 35. Then the only difference is that one part is cylindrical in one joint, while the corresponding part in the other is spherical?

754 A. That is the only difference that I see between the two—that one is cylindrical, while the other is spherical.

Q. 36. Would you consider it a perversion of terms to call that cylindrical joint a ball-and-socket joint?

A. Popularly, I should say it was a ball-and-socket joint.

Q. 37. But mechanically?

A. Mechanically, one is the same as the other, with the exception that one is cylindrical and the other is spherical.

Q. 38. And you say it would not require any invention to invent either one of these joints referred to, were the other in existence?

A. I don't think it would.

Q. 39. Were a machine, with the upper joint in Exhibit B B forming a part of it, presented to you would you, as a mechanic, be able to construct a machine similar to Exhibit L, with the spherical joint, without invention?

A. Yes; I think I should.

Cross-examination of WILLIAM WALLACE HANSCOM by Mr. SCRIVNER:

755 Q. 1. As between Exhibits B B and L, I understand your testimony to be this: That those upper joints, so far as the practical operation of the machine is concerned, are substantially the same?

A. They effect the same result. If a man come to me in the shop and asked me to make one or the other I should make a little study over that, as to the cost of them, to determine which was the best to make.

Q. 2. The mechanical construction of the two joints is different, then?

A. The mechanical construction is different.

Q. 3. And, of course, you would have to figure the cost of two?

A. Yes, sir.

Q. 4. The mechanical construction of the two joints being different, the cost would not be the same?

A. Of course I would consider that. There is enough difference in their general appearance so that if any one brought them to me to examine them I should say so—how the labor would want to be proportioned—to determine the comparative cost of the two.

Q. 5. Now explain to me what motion Exhibit B B has that Exhibit J has not, so far as the upper joint and the discharge pipe are concerned.

A. This (upper joint in Exhibit B B) has a motion confined
756 to one direction—up and down—while the other is not confined to that motion.

Q. 6. Does not the upper joint in Exhibit J have that motion—up and down?

A. It has any motion.

Q. 7. Does it not have the motion up and down?

A. Certainly it does.

Q. 8. Tell me some motion that the upper joint in Exhibit B B has that the upper joint in Exhibit J has not.

A. So far as the movement in direction is concerned this (upper joint in Exhibit J) has a movement which cannot be given to that (upper joint in Exhibit B B), and this (upper joint in Exhibit B B) has a movement in a confined direction while that (upper joint in Exhibit J) has not.

Q. 9. The joint in Exhibit B B, referred to, has a motion up and down?

A. Yes, sir.

Q. 10. The upper joint in Exhibit J has that motion, has it not?

A. It may have it; there is nothing to show that it is a positive up-and-down direction. It is free to be moved in all directions, but there is nothing to move it in any one particular direction.

Q. 11. Is there anything to move it up or down in Exhibit B B in one direction?

757 A. I understand that there is; that it can be moved up and down.

Q. 12. I am speaking with reference to the discharge pipe in connection with the canvas joint on Exhibit J. Does it not have an up-and-down motion?

A. It has a motion in every direction. There is nothing to confine that movement in any one direction.

Q. 13. Can you state any other motion or operation that the discharge pipe in Exhibit B B, in connection with the upper joint, has that the discharge pipe in Exhibit J has not?

A. This discharge pipe in Exhibit B B, I understand, has only one motion, up and down.

Q. 14. Then the difference between Exhibits J and B B is that the movement of the discharge pipe in Exhibit B B is confined to one direction, up and down, and the discharge pipe in Exhibit J may be operated in all directions? It is not confined to any one direction?

—. ——.

Q. 15. It may be operated longitudinally or horizontally?

A. Its motion is indiscriminate, in all directions.

Q. 16. What sort of a joint do you consider respondents' Exhibit I?

A. That seems to be a ball-and-socket joint—a section of it.

758 Q. 17. That is what is ordinarily termed a ball-and-socket joint?

A. That is what is ordinarily termed a ball-and-socket joint; yes, sir.

Q. 18. How long have ball-and-socket joints like that been used?

A. That I can't answer.

Q. 19. Since you have been engaged in mechanics, I suppose?

A. Since I can recollect; yes, sir.

Q. 20. What is the difference in the principle of operation between the joint shown in Exhibit I and the upper joint shown on Exhibit L? I do not mean in reference to their construction, but with reference to the principle of operation of the two joints.

A. The movement of one is confined to one direction and the movement of the other is not confined to one direction.

Q. 21. They are both ball-and-socket joints, though, are they not?

A. Yes; only that (upper joint in Exhibit L) is a portion of a ball-and-socket joint and this (Exhibit I) is a complete ball and socket, inasmuch as it has a universal motion.

Q. 22. How much of the ball-and-socket joint is shown in the upper joint in Exhibit L?

A. There is the cup and the ball.

Q. 23. It is a ball-and-socket joint, then, limited to a universal motion, is it?

759 A. Yes; limited to a universal motion.

Q. 24. The effect of the pressure of the water through the upper curved section in Exhibit B B is to press the joint together and make it water-tight?

A. Yes, sir.

Q. 25. And when the pressure is removed the parts naturally fall apart, do they not?

A. Unless there is something to keep them in their place.

Q. 26. What is the effect of the pressure of the water passing through the upper joint of the machine represented by Exhibit L?

A. The effect of the pressure is to force the spherical or ball portion of the joint from the discharge pipe. The tendency of the pressure of the water is to press these parts apart.

Q. 27. And to force the parts composing the joint asunder?

A. Yes, sir.

Q. 28. In Exhibit B B the pressure of the water has a tendency to force the parts forming the upper joint together, has it not?

A. Yes, sir.

Q. 29. What is your idea of a mechanical equivalent?

A. It is where one machine may be made to do the work of another in about the same manner.

760 Q. 30. If you take a ball-and-socket joint exactly or substantially like the ball and socket shown by Exhibit I and

apply it to a machine like Exhibit L could it not be made practically successful?

A. I don't know.

Q. 31. You could give it an up-and-down motion, could you not?

A. It would require additions to it, of course, to confine it to that motion.

Q. 32. But you could give it an up-and-down motion, could you not?

A. Certainly.

Q. 33. You could confine it to the up-and-down motion, too, could you not?

A. Certainly, by means of guides.

Q. 34. But, leaving that part out, without any changes to confine it to an up-and-down motion, taking an ordinary ball-and-socket joint, you would have an up-and-down motion, would you not?

A. I don't know whether you would or not.

Q. 35. If you had a universal you would have an up-and-down motion, would you not?

A. The universal motion is not an up-and-down motion; I don't understand it to be so. When a joint has a universal motion it is free to move in all directions.

761 Q. 36. Then it sometimes moves up and down?

A. It could move up and down, but it is not confined to one direction.

Q. 37. Then the only difference in principle between the upper joint on Exhibit L and Exhibit I is the fact that the joint referred to on Exhibit L is confined to one motion, while the other is not; is not that so?

A. This (Exhibit I) is a surface joint, while that (upper joint on Exhibit L) is not.

Q. 38. But so far as the operation of the joint is concerned, I mean. They are both, you say, ball-and-socket joints?

A. This (upper joint on Exhibit L) is part of a ball-and-socket joint.

Q. 39. It is a limited ball-and-socket joint, as you have termed it, because it is limited to one motion?

A. That is why I call it a limited joint. There are parts of it that compose what is properly called a ball and socket.

Q. 40. But the limitation is from the fact that it is limited to one motion?

A. Yes, sir.

Q. 41. That is why you call it a limited ball-and-socket joint?

A. Yes, sir.

Q. 42. Would you consider, then, the upper joint in Exhibit L and Exhibit I equivalents of each other? 762

A. I would not, because they do not do the same thing.

Q. 43. What is the difference?

A. One is confined to a movement in one direction and the other is not, but moves in all directions indiscriminately.

Q. 44. Is that all the difference?

A. No; one is a packing joint, the other is not.

Q. 45. You say that the joint Exhibit I is a surface joint?

A. Yes; I presume it is—I suppose it is.

Q. 46. The joint in Exhibit B B referred to is a surface joint, too, is it not?

A. Yes.

Q. 47. Now, there is just as much difference between the upper joint in Exhibit L and Exhibit I in that respect as there is between the upper joint in Exhibits L and B B, is there not?

A. As far as the difference in their surfaces is concerned, one has a soft joint and the other has a metallic joint. The upper joint in Exhibit B B and Exhibit I are alike in that respect.

Q. 48. And the upper joint in Exhibit L differs from both in that respect, does it not?

763 A. L is not a surface joint; consequently in that respect it is different from both of the others.

Q. 49. That is a difference well known in mechanics between the packing joint and the metallic joint, is it not?

A. Yes, sir.

Q. 50. Is it not an important difference between joints in mechanics?

A. That is a question of the use to which the joint is to be applied.

Q. 51. But it is a well-defined difference, anyway, is it not?

A. Yes, sir; a well-known difference.

Q. 52. How many points of difference do you find between Exhibit I and the upper joint on Exhibit L?

A. One difference is that Exhibit I is a surface joint and the joint in Exhibit L is what we call a packing joint; another difference is that in Exhibit L the movement is confined to one direction, while in Exhibit I it is not confined to any direction; another difference is that in Exhibit I the ball portion is on the discharge portion of the joint and the female portion is on the stationary portion of the joint, while in L the female portion is on the discharge pipe, while the ball portion is on the stationary part; as this joint, Exhibit I, is constructed, the tendency of the pressure of the water is to force the parts together, while in L the
764 tendency of the pressure of the water is to force the parts of the joints apart.

Q. 53. Now, take Exhibit I and note the difference between that and the upper joint on Exhibit B B.

A. One difference is that in B B the motion is confined to one direction, while Exhibit I has a movement in all directions; I-B B the joint is what we call a cylindrical joint, while Exhibit I is a spherical joint. They are both surface joints and are kept together by the pressure of the water.

Q. 54. Which is the most like Exhibit I—the upper joint on Exhibit B B or the upper joint of Exhibit L?

A. You can sum up the differences I have given there and that will show what the number of the differences are.

Q. 55. Take Exhibit I and the upper joint in Exhibit L and state in what respects they are similar to each other.

A. They are similar in respect to both being what is called a ball-and-socket joint—that is, spherical surfaces.

Q. 56. Now, take Exhibit I and the upper joint on Exhibit B B and state what their points of similarity are.

A. The points of similarity between I and B B are that they both have surface joints, and the tendency of the pressure of 765 the water is to force the parts together. In Exhibit I both portions of the joint are enlarged beyond the size of the pipe, while in the case of B B only one portion of the joint is enlarged.

Q. 57. Then you have three points of similarity between Exhibit I and the upper joint on Exhibit B B, have you not?

A. That is, that they are surface joints; that they are pressed together by the pressure of the water, and that the ends of the joint are enlarged; but in B B there is only the end of the discharge pipe, while the end of the stationary part is not enlarged.

Q. 58. There are three parts of similarity to some extent?

A. The third is to a small extent—to the extent that one house might have an enlargement on it that was large and another an enlargement that was small; but that would not make the houses just alike in shape and form.

Q. 59. Would you consider Exhibit I and the upper joint on Exhibit B B equivalents of each other in mechanics?

A. No, sir.

Q. 60. Why?

A. Because one has a movement in one direction entirely, while the other has an universal movement.

766 Q. 61. Is that the only reason?

A. That is why I have not considered them mechanical equivalents.

Q. 62. Look at Exhibit G and state how many motions the discharge pipe has in that.

A. That has one, an up-and-down motion.

Q. 63. It has the same motion, so far as that is concerned, as the discharge pipes on Exhibit B B and Exhibit G have?

A. Yes, sir.

Q. 64. Then if such a machine as Exhibit G were known before either of those others were gotten up there would be nothing new in either of them in that respect?

A. No; not so far as its getting an up-and-down motion is concerned.

Redirect-examination of William Wallace Hanscom by Mr. Boone:

Q. 1. If you were convinced that a machine constructed similar to Exhibit G was not a practical machine would you then consider the upper joint in that machine the equivalent of the upper joint in Exhibit B B?

A. If it would not do the work of the other I wouldn't con-767 sider it an equivalent of the other.

Q. 2. In a hydraulic machine of this character would you consider the canvas section shown in Exhibit J the equivalent of the upper joint shown in Exhibit B B?

A. No, sir.

Q. 3. Would you consider a flexible section in a hydraulic pipe or machine similar to that shown on Exhibit J to be the equivalent of a close-moving metallic joint?

A. No, sir.

Q. 4. What advantage has the close-moving metallic joint over the flexible section?

A. So far as that is concerned, it is a question of direction.

Q. 5. Where a joint is formed by the two surfaces coming together is not the motion limited to one point?

A. No; it is not. In the metallic joint the movement is confined to the surface in contact, while in the case of the flexible joint the movement is through the whole portion of the flexible parts.

Q. 6. What material difference do you find between the canvas section on Exhibit J and the upper joints represented on Exhibits L and B B in their operation?

A. In J the motion of the discharge pipe — indescriminate in all directions, while in B B and L it is limited to one direction.

768 Q. 7. It is limited by substantially the same means in Exhibits L and B B?

A. It is in this respect: By the construction of the joint it is limited to its movement in one direction. The shape and form of these two joints represented in Exhibits L and B B are different.

Q. 7½. If the joint represented in Exhibit I were used in a water pipe in which it was subjected to a great degree of pressure would it be a practically operating joint in a hydraulic machine?

A. That I can't say; I haven't had experience enough in hydraulic machines to tell that.

Q. 8. Would the pressure of the water tend to make it an immoveable joint?

A. No more than it would in B B.

Q. 9. Is there not a larger surface in contact in the joint Exhibit I?

A. There may be or may not be; I don't know.

Q. 10. Is it not a necessity of that construction of joint represented by Exhibit I that the surface of the moving parts in contact must be greater than the surface of the moving parts in contact in the upper joint in Exhibit B B?

769 A. It is a matter to be determined by the uses that are required of it and the range of movement. In constructing the upper joint in Exhibit B B if you have an excessive or extreme movement in one direction you would not require so much surface as you would in Exhibit I to get the amount of movement in the same direction.

Q. 11. You stated in your cross-examination that the upper joint on Exhibit L was a portion of the ball-and-socket joint?

A. Yes, sir.

Q. 12. Do you not find that the upper joint on Exhibit B B is also a portion of a ball-and-socket joint, with the exception that the joint in Exhibit B B is cylindrical instead of spherical?

A. That makes the difference between that and the ball-and-socket joint. What is popularly called a ball-and-socket joint is where the joints are spherical. You get the same results with the joints made in another form.

Q. 13. Are you familiar with the joint used on oscillating engines, consisting of two curved sections moving together?

A. Yes, sir.

Q. 14. Is there anything in that joint used on oscillating engines which would suggest the upper joint in Exhibit B B?

770 A. The idea of curved surfaces working in contact might have an influence in suggesting the idea of curved surfaces working in contact there, but not with a pressure on top of them, as there is in this (upper joint on Exhibit B B), or rather a pressure to keep the joint in contact. There are various ways of making the surfaces of the oscillating engine in contact; some of them are planed surfaces and some are circular or curved surfaces.

Q. 15. Do those curved surfaces on oscillating engines form a joint or a valve?

A. They form a valve. Of course, they form a joint between the surfaces.

Q. 16. No more than any other two surfaces coming together in any other relation?

A. The same as a valve on a steam engine, only with this difference, that in oscillating engines the tendency is always to force the joints and surfaces apart, while in the ordinary valve of a steam engine the tendency of the pressure of the steam is to force the surfaces together.

Recross-examination of WILLIAM WALLACE HANSCOM by Mr. SCRIVNER:

771 Q. 1. One of the unusual features of the upper joint in Exhibit B B is the fact that *that* the parts are held together by the water pressure, is it not?

A. I don't know as I can say that it is an unusual feature; I don't think so.

Q. 2. What is the new feature in that joint on Exhibit B B referred to?

A. I should say the combination of this arrangement for controlling it for this particular purpose.

Q. 3. What arrangement?

A. The arrangement of the whole joint. We know that it is usual to press together surfaces with the fluid that is going through; mechanics know that; know that a joint is kept tight by it; but it is the adaptation of those principles and knowledge to this particular purpose, I suppose, which makes the invention whatever the invention may be.

Q. 4. Taking the joint itself, there is nothing new about that, is there—the features of that upper joint on Exhibit B B?

A. I have never seen any other joint that is made like that, to my knowledge.

Q. 5. In what respect does it differ from joints you had seen before?

A. I don't know that—that I have seen a discharge-pipe made with a joint where the surfaces are pressed together like that.

Q. 6. The surfaces pressed together like what?

772 A. Pressed together by the pressure of the water with the position of the cylinder attached to the end of the discharge pipe.

Q. 7. Then the only new thing is the particular form of the discharge pipe?

A. I don't see that that is new; it may be old.

Q. 8. Do you see anything else that is new about the joint referred to other than the particular form of construction you have described?

A. That is all that is new about it. Of course the construction makes the newness of it.

Q. 9. The fact of the parts being held together by water pressure is old, is it not?

A. That the surfaces are held together by water pressure?

Q. 10. That principle is not new, is it?

A. No; not the holding of the surfaces of that joint together by water pressure.

Q. 11. Cylindrical joints would hold, would they not—have been used for many years?

A. Yes.

Q. 12. And that upper joint on Exhibit B B is a cylindrical joint, is it not?

A. Yes; that is a cylindrical joint.

Q. 13. But it is a peculiar form of cylindrical joint, and such a form as you have never seen before?

773 A. I don't know that I have ever seen one just like that before.

Q. 14. The upper joint on Exhibit L is a peculiar form or a limited form of a ball-and-socket joint?

A. Yes, sir.

Q. 15. The difference between the two joints, referred to on Exhibits L and B B, are differences in construction, are they not?

A. Yes, sir; different in construction.

Q. 16. Which one of the joints on Exhibit F F resemble the joint in the oscillating engine which you have referred to?

A. Neither of them are similar to the joint in an oscillating engine, from this fact: that they have both soft packing between, but in the oscillating engine the surfaces are metallic—what we call surface joints.

Q. 17. Is that the only difference?

A. The difference is that those joints on the oscillating engines are made for the purpose of admitting the steam alternately at one end of the cylinder and the other. The only similarity between the cylindrical joint on Exhibit F F and the joint referred to on the oscillating engine is that both have curved surfaces. It is about the same similarity that there would be between two four-story houses, although their outside appearance might be similar—

774 one might be a theatre and the other might be a dwelling-house or a store.

Q. 18. Curved surfaces in joints are not new?

A. Curved surfaces in joints are not new.

Q. 19. State again, and specifically describe the points in the construction of the upper joint in Exhibit B B that are different from anything that you had before seen.

A. I don't know that I have seen a joint where there was cylindrical enlargement on the end of a discharge pipe for the purpose of operating it in one direction.

Q. 20. Did you ever see a joint of that kind anywhere else?

A. I could not say that positively just at present. I don't recollect. I may have seen them. I would not say that I have not seen them and I wouldn't say that I have seen them.

Q. 21. Taking that upper joint on Exhibit B B do you see anything else about its construction that is new to you as a mechanic, except that there is a cylindrical enlargement on the end of a discharge pipe?

A. The whole operation of this joint on Exhibit B B, constructed on the discharge pipe, is new to me—that is, constructed as a whole.

Q. 22. But no particular part of it is new?

775 A. Of course, I know that discharge pipes are held. I know that cylindrical surfaces are held and that joints are held, and water-packed joints are held,' but I don't know that I have seen anything constructed just as that (upper joint in Exhibit B B) is constructed. I have no recollection of it.

(Testimony closed.)

Endorsed: Filed January 5th, A. D. 1881. L. S. B. Sawyer, clerk, by J. F. O'Beirne, deputy clerk.

776 At a stated term, to wit, the February term, A. D. 1884, of the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, held at the court-room, in the city and county of San Francisco, on Monday, the 17th day of March, in the year of our Lord one thousand eight hundred and eighty-four.

Present: The Honorable Lorenzo Sawyer, circuit judge.

Order Allowing Appeal.

FRANK H. FISHER *et al.*
vs. } No. 2296.
RICHARD HOSKIN *et al.*

On motion of M. A. Wheaton, Esq., of counsel for the defendants herein, it is ordered that an appeal from the decision rendered and the decree filed and entered in the above-entitled cause on the 7th day of March, A. D. 1884, being a day in the February term, A. D. 1884, of said circuit court, to the Supreme Court of the United States be, and the same hereby is, allowed, and that a certified transcript of the pleadings, depositions, evidence, stipulations, and proceedings be forthwith transmitted to said Supreme Court upon the appellant- giving a bond in the sum of five hundred dollars if 777 said bond is not a supersedeas bond; and if said bond is supersedeas in its nature, then the amount of said last-named bond to be the amount awarded in the decree herein, with three years' interest thereon added, and also in addition the sum of five hundred dollars.

778 *Bond on Appeal.*

In the Supreme Court of the United States.

Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, Appellants,

vs.

Frank H. Fisher and Joshua Hendy, Appellees.

Know all men by these presents that we, Richard Hoskin, of the city of Marysville, in Yuba county, State of California, as principal, and Herman Roger and Crowson Smith, of the city and county of San Francisco, State of California, as sureties, are held and firmly bound unto Frank H. Fisher and Joshua Hendy, the above-named appellees, in the sum of five hundred dollars, lawful money of the United States of America, to be paid to the said Frank H. Fisher and Joshua Hendy; to which payment, well and truly 779 to be made, we bind ourselves and each of us, jointly and severally, and our and each of our heirs, executors, and administrators, firmly by these presents.

In witness whereof we have hereunto set our hands and affixed our seals this twenty-first day of March, A. D. 1884.

The condition of this obligation is such that whereas the above-named Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig have taken an appeal to the Supreme Court of the United States to reverse the decree rendered in the cause entitled Frank H. Fisher and Joshua Hendy, complainants, against Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, defendants (No. 2296), by the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, which said decree was filed and entered of record in said circuit 780 court on the seventh day of March, A. D. 1884: Now, therefore, if the above-named Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig shall prosecute their said appeal to effect and answer all costs if they shall fail to make good their plea, then this obligation shall be void; otherwise to remain in full force and effect.

RICHARD HOSKIN.
H. ROGER.
CROWSON SMITH.

Signed, sealed, and delivered in presence of—
L. S. B. SAWYER.

UNITED STATES OF AMERICA, }
District of California, } *ss:*

H. Roger and Crowson Smith, being duly sworn, each for himself says that he is a resident and householder within said district of California, and that he is worth the sum of five hundred dollars, exclusive of property exempt from execution and over and 781 above all his just debts and liabilities.

H. ROGER.
CROWSON SMITH.

Subscribed and sworn to before me by H. Roger this 21st day of March, A. D. 1884; by Crowson Smith this 22d day of March, 1884.

L. S. B. SAWYER,
Com'r U. S. Cir. Court Dist. Cal.

Endorsed: The form of the within bond and the sufficiency of the sureties thereon are hereby approved. (Signed) Lorenzo Sawyer, U. S. circuit judge, ninth judicial circuit. Filed March 24, 1884. L. S. B. Sawyer, clerk, by F. D. Moncton, deputy clerk.

782 At a stated term, to wit, the February term, A. D. 1884, of the circuit court of the United States of America of the ninth judicial circuit in and for the district of California, held at the courtroom, in the city and county of San Francisco, on Saturday, the 29th day of March, in the year of our Lord one thousand eight hundred and eighty-four.

Present: The Honorable Lorenzo Sawyer, circuit judge.

Order of Substitution of Solicitor.

F. H. FISHER *et al.*
vs. } No. 2296.
RICH'D HOSKIN *et al.*

On motion of John L. Boone, Esq., solicitor for complainant-, it is ordered that W. H. H. Hart, Esq., be substituted for said John L. Boone as solicitor for said complainants.

783 In the Circuit Court of the United States of America for the District of *of* California.

FRANK H. FISHER *et al.*
vs. } No. 2296.
RICHARD HOSKIN *et al.*

I, L. S. B. Sawyer, clerk of the circuit court of the United States of America for the district of California, do hereby certify the foregoing seven hundred eighty-two written pages, numbered from 1 to 782, inclusive, to be full, true, and correct copy of the record (excepting models), and of all proceedings in the above and therein entitled cause, and that the same together constitute the transcript on appeal to the Supreme Court of the United States in said cause.

Attest my hand and the seal of said circuit court this 20th day of October, A. D. 1884.

[The Seal of the Circuit Court, District of Cal'a.]

L. S. B. SAWYER, *Clerk.*

784 UNITED STATES OF AMERICA, *ss:*

To Frank H. Fisher and Joshua Hendy, Greeting:

You are hereby cited and admonished to be and appear at the Supreme Court of the United States to be held at the city of Washington, in the District of Columbia, on the second Monday of October, A. D. 1884, pursuant to an order granting an appeal to said Supreme Court made and entered by the circuit court of the United States, district of California, in the cause entitled Frank H. Fisher and Joshua Hendy against Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, to show cause, if any there be, why the decree in the said order mentioned should not be corrected and speedy justice should not be done to the parties in that behalf.

Witness the Honorable Lorenzo Sawyer, circuit judge of the United States for the district of California, this 21st day of April, A. D. 1884, and of the Independence of the United States the 108th.

LORENZO SAWYER,
U. S. Circuit Judge, Ninth Judicial Circuit.

785 [Endorsed:] No. 2296. United States Supreme Court. Richard Hoskin *et al.*, appellants, *vs.* Frank H. Fisher *et al.*, appellees. Original. Citation. Filed October 7th, 1884. L. S. B. Sawyer, clerk, by F. D. Moncton, deputy clerk.

Due service of the within citation acknowledged on this the sixth day of October, A. D. 1884.

WM. H. H. HART,
Solicitor for Complainants and Appellees.

Endorsed on cover: California C. C. U. S. No. 169. Richard Hoskin, Joseph H. Hoskin, R. R. Craig, and Joseph Craig, appellants, *vs.* Frank H. Fisher and Joshua Hendy. Filed 1st November, 1884.

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Office Supreme Court U. S.
FILED.
JAN 23 1888
JAMES. H. McKENNEY,
CLERK.

No. 169.

OCTOBER TERM, 1887.

IN THE

SUPREME COURT of the UNITED STATES.

RICHARD HOSKIN, JOSEPH H. HOSKIN,
R. R. CRAIG and JOSEPH CRAIG,
Appellants,

VS.

FRANK H. FISHER and JOSHUA HENDY,
Appellees.

BRIEF OF APPELLANTS.

M. A. WHEATON,
Counsel for Appellants.

LANGHORNE & MILLER,
Counsel for Appellees.

In the Supreme Court

OF THE

UNITED STATES.

RICHARD HOSKIN,
JOSEPH H. HOSKIN,
R. R. CRAIG, AND
JOSEPH CRAIG,
Appellants,
vs.
FRANK H. FISHER AND
JOSHUA HENDY,
Appellees.

APPELLANTS' BRIEF.

The appeal in this case is taken from a decree rendered in the United States Circuit Court, District of California.

The action was brought by the appellees, Fisher and Hendy, against the appellants, Hoskin and others, for an alleged infringement of a

United States re-issued patent, granted for an alleged improvement in hydraulic mining apparatus.

The original patent was No. 110,222, and was granted December 20th, 1870.

On December 17, 1872, a re-issue of the patent was taken out, said re-issue being No. 5193. On the 29th of March, 1879, an application was filed for a second re-issue of the same patent, and such second re-issue was granted September 2nd, 1879, and is No. 8876.

This second re-issued patent is the one upon which the present suit is based. The bill was filed on the 3rd day of May, 1880, eight months after the re-issue was granted. The original patent is in the Transcript, from folios 560 to 567, as Exhibit No. 5. This original patent had *but one claim*, and it was for a combination of eleven different elements.

The re-issued patent on which this suit is based is in the Transcript, from folios 548 to 559, as Complainant's Exhibit AA. This re-issue has *three* claims, the first of which is substantially the same as the claim in the original patent. It is for a combination of the same elements, although its language is slightly changed. *This first claim has not been infringed, and the decree so admits.*

The second claim of the re-issued patent calls for a ball and socket joint for connecting the discharge pipe of a hydraulic mining apparatus with the end of a swivel section.

The hydraulic machine which was made by the patentee (Fisher) and which, as shown by the evidence, contained the only inventions he ever made in hydraulic machines, did not have any ball and socket joint, nor any joint which would permit of a semi-universal motion, such as all ball and socket joints furnish, but instead thereof it contained a semi-cylindrical joint which permitted an up and down or vertical movement of the nozzle only.

The third claim of the re-issued patent is for a combination of a discharge pipe having a semi-cylindrical or ball-shaped enlargement at its base in combination with a cup-shaped socket on the end of the horizontal swiveling section. *Neither the second nor third claim, nor any equivalent of them, was in the original patent*, which was granted more than eight years before the re-issue was applied for. *It is only the second and third claims which are adjudged to be infringed.* The defendants appeared and answered the bill and denied the infringement. The answer also set up that the second claim of the patent was anticipated by a patent granted to Joseph M. Allenwood on the 12th of

July, 1864, and also by machines made by the said Allenwood, as described in his patent; also by machines made by the patentee, Frank H. Fisher, under the Allenwood patent, giving the places where said machines were used, by whom used, and the evidence of the parties who used them. That on the 13th of December, 1871, the said Allenwood patent was assigned to R. R. Craig and Joseph Craig, who obtained a re-issue thereof, and the said Craigs, being two of the defendants in this case, were the owners of said Allenwood patent.

As other anticipations the answer also set up that Jenkins W. Richards of Michigan Bluffs, Cal., applied for a patent on the 26th day of November, 1867. That the said Richards made two machines, as described in his application for a patent, as early as the year 1867, and the same were publicly and successfully used, giving the place where they were used and the names and residences of the parties who used them.

The answer also set up an anticipation by a machine constructed in 1865 at Nevada City, by Quartius Rice.

(The name is "Price" in the printed transcript, but it is "Rice" in the answer on file, and "Rice" is the correct name.)

The answer avers that the patentee Frank H. Fisher, well knew of said machines made by Allenwood and by Richards, and by Rice, long before he, Fisher, made, or claimed to have made, any invention in hydraulic machines. That he, Fisher, had been employed to make said Allenwood machines; and the machine made by said Rice, had for several months been in front of a machine shop, in which said Fisher was at work, and he saw the machine and well knew its construction, long before he made his alleged invention, or applied for a patent; and that he, Fisher, obtained a re-issue of his said patent, with the said second claim inserted therein, for the express purpose and intent of defrauding the public, well knowing that he was not the inventor of what was there described and claimed, etc.

The answer further sets up, that in all of the hydraulic machines mentioned in the answer, including the plaintiffs, it was necessary to their successful operation in mines, that a device known as radial plates or "rifles," should be inserted in the pipe or nozzle to straighten the stream passing through it; otherwise the stream would scatter and lose much of its effective power and force. That the defendants R. R. Craig and Joseph Craig, had ever since the 11th day of April, 1870, been the owners of a patent granted to Seth Martin and

Charles F. Macey, on the 8th day of December, 1863, for said radial plates or "rifles," as they were commonly called.

Also that the said Craigs had commenced suit on the 8th day of November, 1871, against the said Fisher in the said Circuit Court, and such proceedings were had therein that on the 7th day of January, A. D. 1873, a decree was entered in said suit, adjudging the said Martin and Macey patent to be valid, and that the said Fisher had infringed the same, and perpetually enjoining him from any further use of the same. That in consequence thereof, the said Fisher and his assigns could only use this machine without said plates or "rifles, in which condition it was practically worthless; and on that account the said Fisher had nearly or quite ceased to manufacture or sell said machines, although the manufacture and sale thereof, had been his principal business prior to the time he was enjoined in said suit from infringing the said Macey and Martin patent.

The answer further sets up that the re-issued patent sued upon is void, because it contains new matter not contained in the original patent, and also because such new matter describes and claims that of which the complainant was not the inventor.

That the said new matter describes a ball and socket joint, formed by the discharge pipe E, and the elbow B, etc., but the answer averred that the said Fisher did not discover or invent, or make any hydraulic machine, which machine or combination, included either a ball and socket joint, or a ball and socket joint in sections, or a discharge pipe having a ball shaped enlargement at its base, and his said original patent did not contain any description of said devices, or either of them, and did not claim said device in combination or otherwise.

The answer further asserts, that all that was said in the last re-issued patent about a ball and socket jointed section, and ball and socket joints, and a discharge pipe with a ball shaped enlargement at its base, was all new matter not contained in the original patent, and was inserted in the last re-issued patent fraudulently, and for the sake of deceiving and misleading the public.

The evidence upon the question of infringement and the validity of the re-issued patent sued upon, was taken before the Examiner, and is in the Transcript from folios 567 to 776.

An interlocutory decree was entered in the case, and is in the Transcript from folios 54 to 58. This interlocutory decree was in the complainants' favor. It decided only that the defendants infringed the *two new claims*, and it referred the case to the Master to take an account of the number of hydráulic apparatus made or sold by defendants, also of the gains, profits and advantages which the defendants either of them had received on account of the infringement of the complainants' patent, by making, using and selling, or the making or using, or selling of the apparatus described and claimed in the second and third claims of the re-issued patent, No. 8876, sued upon, and also the damages which the complainants had sustained thereby. The evidence upon the question of profits and damages is in the Transcript folio 59 to 525.

The testimony which was taken upon the question of infringement, although taken long before that which was taken before the Master upon the accounting, is placed last in the Transcript, while the testimony taken upon the accounting is placed first in the Transcript. Why this is so we do not know. The Master's report is in the Transcript from folio 44 to folio 54. This report is placed in the printed Transcript before the interlocutory decree, although the interlocutory decree was first made and entered. Although the interlocutory decree ran against the defendants R. R. Craig and Joseph Craig, the evidence upon the accounting showed that they had not made or sold the alleged invention, and no judgment is entered against them for damages.

The Master reported $16,465.33 as profits made by the defendants Hoskins on account of the infringements. In arriving at his conclusion the Master allowed all the profits realized by the defendants Hoskins in the manufacture and sale of the machines. He allowed nothing to them on account of the improvements which they themselves had made, nor anything for the said rifle patent, or their right to use it, although he allowed to them so much as they had paid out for the license giving them the right to use it. The rifle patent expired on the 8th day of December, 1880, and during the time covered by the accounting. Up to the time of its expiration, he, Hoskin, paid to the Craigs a certain amount for the right to use the rifle patent. After this rifle patent expired, the whole amount of all the profits made on the entire machine by the Hoskins was charged against them by the Master. It was conceded all through, and is still conceded, that no single jointed machine could be an infringement of the complainants' patent.

Much evidence was taken, showing that the defendants in the suit, had the right to manufacture practical hydraulic machines made with a single joint, and which were not and could not under any circumstances, be an infringement of complainants' patent.

The *defendants by virtue of their so called "rifle' patent* (the Macey and Martin patent), had a monopoly of the hydraulic machine business in California. After the contract between themselves of October 24th, 1871 (see transcript folio 47), in which the defendants "pooled" a large number of patents owned by them, on hydraulic machines, the defendants adopted and made, and sold a two jointed machine, called the "Little Giant."

The evidence also shows that the defendants could have manufactured and sold single-jointed machines instead of the "Little Giant" machine, to the same extent that they did sell the "Little Giant" machine. The Master, however, refused to make any comparison of the value of the plaintiffs' invention with other hydraulic machines which did not contain it, but which would do the same work in equally as good manner.

The defendants filed exceptions to the said Master's report, which exceptions are in the transcript from folio 531 to 537; these exceptions are six in number.

The substance of the first exception is that the Master found and reported that the complainants' invention enabled the defendants to produce a machine which controlled the market, whereas the evidence shows the contrary to be the fact.

The substance of the second exception is that the Master in effect had found and reported that the success of the "Little Giant" machines and all the pecuniary advantages belonging to them, were entirely owing to the *invention* called rifles, which was covered by the patent owned by the defendants, and that nothing was gained of a pecuniary nature by the defendants' improvements, whereas the Master should have found that the improvements by the defendants in the "Little Giant" machines were of a great pecuniary value, etc.

The substance of the third exception was that the Master found and reported in effect that the complainants were entitled to recover all the net profits made by the defendants Hoskin in the manufacture and sale of the "Little Giant" machine, except what they had paid for the use of the rifle patent, whereas the Master should have found that said rifle patent expired on the 8th of September, 1880, that the defendants paid no royalty on the patent after it expired, and that the value of the rifle in each one of the "Little Giant" machines was the same after the patent expired as it was before.

The amount of the value of the rifles should have been allowed to the defendants after the patent expired, the same as it was before, instead of its being given to the complainants, who never owned any interest in the rifle patent.

The substance of the fourth exception is that the Master found and reported in effect that the complainants' invention was necessary to the successful working of hydraulic mining machines, and that no goods were marketable, whereas he should have found and reported the contrary.

The substance of the fifth exception is that the Master found and reported that the defendants' patents, including the rifle patent, was fixed by the contract made by and between the defendants Hoskin and the defendants Craig, which contract is in the evidence; but in his report the Master gave the defendants a credit of only ten thousand and seventy-five dollars on account of their rifle and other patents, whereas the value of the inventions covered by the defendants' patents, as fixed by said contract on machines made and sold by the defendants, amounted to not less than $20,255.

The substance of the sixth exception is that the Master has reported that the defendants gained advantages by using complainants' invention to the amonnt of $16,465.33, whereas he should have found and reported that the complainants have failed to prove that the defendants had made any gains or profits from using such invention, and should have found and reported, under all the evidence, that the defendants had not gained any advantage or made any profits from using complainants' invention.

The exceptions to the Master's report were overruled, and the report was confirmed on the 3rd of March, 1884 (see Transcript, folios 537 to 538), and a final decree was entered for the complainants on the 7th of March, 1884 (see Transcript, folios 541 to 544).

After the first interlocutory decree was entered, on the 17th day of March, 1882, a petition for a rehearing was granted and a second interlocutory decree, being the one already referred to, was entered in the case.

The construction of the joints in the Little Giant—the defendants'—machine were so different from those of the Fisher machine, that one of the defendants' machines *weighed more than one-third less than one of the Fisher machines of the same capacity.*

The really new feature of the Fisher machine was a system of levers, etc., with a pawl and rachet, all of which facilitated turning and holding the nozzle in any desired direction and position. These features of his machine were the substance of the one and only claim of the original patent. *These features, however, the defendants have never used.* It is in the first claim of the present patent, and *the Court finds no infringement of this first claim* in its decree. See transcript, folio 40.

When Fisher put his machine on the market in 1871, he was confronted by the rifle patent and a final decree was entered against him by the U. S. Circuit Court in California on the 7th day of January, 1873, enjoining him from using the said rifles. This decree did not run against his invention *nor against any thing covered by his patent. It nevertheless rendered his machine worthless*, and none of his machines--the Hydraulic Chiefs—have been made by any one since the year 1872, nearly seven years before the re-issue now sued upon was applied for. Although their rifle patent expired on the 8th day of December, 1880, still not a single Hydraulic Chief has been made since by any one.

The defendants in this case, R. R. Craig and Joseph Craig, were the pioneers in the introduction into practical use of hydraulic mining machines in the mines of California. They made many inventions and improvements of their own and purchased several patents of others. They made several kinds of single jointed machines. In such machines the single joint had all the motions of two joints, and was really a double joint. It permitted the nozzle to be pointed in all directions within a certain range of motion. This range was sufficient for practical purposes. This motion has been termed semi-universal, because it was universal to the extent of its range. Among the patents owned by the defendants, was the one mentioned which was called the "rifle" patent. It covered certain radial plates that were placed inside of the nozzle, and had the effect of keeping the stream of water passing through the nozzle solid and compact after it left the nozzle. Before the effect of the radial plates, or *rifles*, as they are commonly called in the testimony, was discovered. the streams of water passing through the machine under the enormous pressure furnished by a head of several hundred feet of water, would so scatter and spray out as it left the machine, that it was practically worthless for hydraulic mining.

The complainant Fisher, as he himself testifies, did not make his alleged invention until about 1870. At this time there were several hydraulic machines in successful use that were as good and effective as his. They all used the rifles. When Fisher got up his machine he was at Nevada City in the mines, and well knew many of the different machines that were in use. He was a mechanic, and had built, or repaired, or assisted in building many of them before he thought of making any invention. He got up a two-jointed machine which he named the "Hydraulic Chief." It had the same motions in it that were in two prior two-jointed machines which were well known to him. One of these prior machines was called the "Allenwood," or "Goose-neck" machine. This Goose-neck machine, had gone into very extensive use, and Fisher himself had made some of them and had repaired others.

The other two-jointed machine with which Fisher was acquainted was one made by Quartius Rice. *Both the joints in this machine were made of iron.* It was made before the rifles were introduced, and for want of the rifles it was used but a very little. It was laid outside of Fisher's shop in Nevada City, and Fisher was well acquainted with its construction long before he made his invention in 1869 or 1870.

In both the Allenwood and Rice machines there were two bends. The lower bend turned upward to a vertical direction, so as to furnish a place for a swivelling joint, which would permit the part of the machine above the joint to be turned around in a horizontal direction. This upper part of the machine was a section of pipe which contained another bend that threw its upper end in a horizontal direction, and the nozzle which was connected to the end of this upper section by another joint. This last joint permitted the nozzle to move up and down in a vertical direction. In getting up his machine, Fisher used the two bends in precisely the same corresponding positions that he had seen them used in the Allenwood and Rice machines. He also used the swivel joint for obtaining a horizontal motion in the same place in which he had seen it used in the other two prior machines. He also put in his machine an upper joint for obtaining a vertical motion of the nozzle in precisely the same position as he had seen it placed in the two other machines. The construction of Fisher's two joints were different from those in the prior machines. The defendants' two joints were also different from Fisher's, *and contained no element of his new construction.*

Besides these two two-jointed machines with which Fisher was acquainted, there was another two-jointed machine, made by Richard Jenkins, of Michigan Bluffs, with which Fisher was not acquainted. Both joints in this machine were made of iron, and both were swivelling joints. The hollow sections of the machine were so bent as to make practical the application of two swivelling joints, one vertical and the other horizontal, and each furnishing a movement around the entire circle. With this machine the stream could be directed in any and every direction. Its range of motion was universal and unlimited.

As before stated, none of these machines would do good work until the rifles were discovered, and then they were all good. As machines for letting the water pass through them and directing the stream by turning the nozzle to any desired point upon the mine to be washed out, they were all good and effective machines without the rifles. But water going through them under the great pressures used, would spray and lose its effective force for tearing down the hard banks against which they were directed. This is illustrated by very high water falls. At the Yosemite falls is one fall of some eight hundred feet in height, well known as the Bridal Veil Fall. As is well known, a falling stream of water gains velocity the further it descends and diminishes in size accordingly. The Bridal Veil at Yosemite follows this law of nature for the first few hundred feet of its descent, but the great velocity which it finally attains dissipates the stream into a spray so that its lower part is a white sheet of spray that requires but a small exercise of the imagination to give it the appearance of an immense bridal veil. The gentle winds waft the sheet of spray back and forth, and in the afternoon, just before the sun goes out of view beyond the opposite mountain wall, a magnificent rainbow is seen, like an embellishment, across the lower end of the gently wafting sheet of white. This spraying of the streams that passed with the immense velocity which several hundred feet of water pressure furnished, was one of the difficulties that prevented the first trials of the first machines from being successful. This difficulty was overcome by the rifles late in 1863, six years before Fisher's invention, and for most or all of that time he had seen the machines doing the best of work.

Assignment of Errors.

On this appeal the appellant assigns as error the following, to-wit.

First—The Court erred in holding that the reissued patent now sued upon was a valid patent, no reason being shown why the re-issue was not applied for within two years after the grant of the original patent.

Second—The Court erred in holding that the *two new claims* of the re-issued patent which were not in the original patent, were valid; the re-issue being applied for more than eight years after the original patent was granted, and no excuse being made or reason shown why the re-issue was not applied for within two years from the date of the original patent.

Third—The Court erred in deciding that the defendants had infringed the said two new claims of the re-issued patent, or either of them.

Fourth—The Court erred in deciding that the complainants were entitled to recover, as profits, all the profits realized by the defendants Hoskin, in the manufacture and sale of their entire machines, the so-called "Little Giants."

Fifth—The Court erred in not allowing to the said defendants the same credit for the value of the invention called the rifles, after the rifle patent expired, as they had been paying for it before the expiration of the rifle patent.

Sixth—The Court erred in overruling the defendants' first exception to the Master's report.

Seventh—The Court erred in overruling the defendants' second exception to the Master's report.

Eighth—The Court erred in overruling the defendants' third exception to the Master's report.

Ninth—The Court erred in overruling the defendants' fourth exception to the Master's report.

Tenth—The Court erred in overruling the defendant's fifth exception to the Master's report.

Eleventh—The Court erred in overruling the defendants' sixth exception to the Master's report.

Under the first and second assignments of error in which we claim error in holding the reissued patent and the second and third claims thereof to be valid, we cite the rule as laid down by this Court in the case of Wollensack *vs.* Reiher, in 115 U. S., 96.

In that case, on page 98, the Court says:

" For the purpose of deciding the question of
" law, arising on the demurrer to the bill, it is
" not necessary to set out the several claims in

" the original and re-issued patents, with a view " to a comparison. It is sufficient to say that it " is *not claimed that the defendant is guilty of an in-" fringement of either of the claims in the original " patent*, as repeated in the re-issue; it is admitted " that the claims in the re-issued patent, infringe- " ment of which is averred, are expansions of " the original claims, not covered by them, but " alleged nevertheless, to be embraced within " the invention as described in the original pat- " ent. This is to say, that if, as a matter of fact, " the patentee was the first and original inventor " of the parts and combinations covered by these " claims, the language of the specification to the " original patent would sufficiently embrace " them.

" It follows from this that if, at the date " the issue of the original patent, the " patentee had been conscious of the nature " and extent of his invention, an inspection " of the patent, when issued, and an ex- " amination of its terms, made with that " reasonable degree of care which is habitual " to and expected of men, in the management of " their own interests, in the ordinary affairs of " life, would have immediately informed him ' that the patent had failed fully to cover the " area of his invention. And this must be

" deemed to be notice to him of the fact, for the " law imputes knowledge when opportunity and " interest, combined with reasonable care, would " necessarily impart it.

" Not to improve such opportunity, under the " stimulus of self-interest, with reasonable dili- " gence, constitutes laches which in equity dis- " ables the party who seeks to revive a right " which he has allowed to lie unclaimed from " enforcing it to the detriment of those who " have in consequence been led to act as though " it were abandoned. * * * The question as " to whether the delay had been reasonable or " unreasonable *it is for the Court to determine, upon* " *the special circumstances brought to its attention;* " and it cannot substitute the decision of the " Patent Office upon the question for its own. " The very question is, whether the Patent Office " has decided rightly, and, as it is a question of " power and jurisdiction, in which the delay " shown is *prima facie* unlawful, *it is incumbent on* " *the party seeking to establish the jurisdiction of the* " *Patent Office to grant the re-issue to show the fact* " *upon which it rests.* In every case of a re-issue, " that office, either expressly or implicitly decides " the question of diligence on the part of the " patentee; and the grant of a re-issue is a decision " that the delay has not been unreasonable. That,

"therefore, is the very question for judicial re-
"view in every suit to enforce a re-issued patent
"in which the question is made; and as we have
"seen, the settled rule of decision is, that *if it*
"*appears, in cases where the claim is merely expanded,*
"*that the delay has been for two years, or more, it*
"*is* ADJUDGED TO INVALIDATE THE RE-ISSUE, *unless the*
"*delay is accounted for and excused by special circum-*
"*stances which show it to have been not unreasonable.*"

In the foregoing case this Court cites many of its own decisions of recent date to sustain the rule which it declares in the language above quoted.

This rule if applied in the present case is decisive of it. In the present case the re-issue was not applied for until *more than eight years after the original was granted.* Even the re-issue has now expired. The one claim that was in the original patent has been substantially preserved in the first claim of this re-issue, *but this claim has not been infringed by the defendants.* "It is sufficient "to say, that it is not claimed that the defendant "is guilty of an infringement of either of the "claims in the original patent as repeated in the "re-issue," is language which applies to this case. While the language of the specifications is somewhat changed, it is still true that the description of the invention and machine made by the complainant is not changed in the re-issued patent from what it was in the original in any important particular. The drawings in the original, and re-issue are precisely alike. *The only object accomplished by the re-issue is an addition of two claims which were not in the original claim.*

The delay of the defendant in applying for the re-issue has not been "accounted for or excused "by special circumstances which show it to have "been not unreasonable;" in fact *nothing in the shape of excuse for the delay* has been attempted by the complainant. There was an intermediate re-issue, but even that was not put in evidence. Not a single circumstance of any nature or kind has been proved or suggested which furnishes any reason *for the delay.* No reason is given for obtaining the re-issue, except to add to it the two new claims which were not in the original patent, and no object has been accomplished by the re-issue except the addition of these two new claims.

The complainants' own evidence shows that he had no object in re-issuing except to put in the new claims. In folio 575 of the transcript he says:

"Q. 3. What was your object in re-issuing the second time, taking out the re-issued patent, Exhibit A A?

"A. *I didn't specify my claim originally in as many words as I might have done. I did not claim all that I was entitled to.*" At folio 606 Mr. Fisher further says:

"Q. 2. Was the patent sued on in that case the same patent as the one upon which the present suit is based, Exhibit A A?

"A. It was not; it was the patent of which A A is a re-issue.

"Q. 7. Which one of these issues is the title of the patent, Exhibit A A, was that suit commenced under?

"A. It was the re-issue number 5193, dated December 17, 1872.

"Q. 4. Did the result of that suit convince you that your patent was inoperative as it then stood?

"A. It did.

"Q. 5. What was the reason of your taking out your present re-issue?

"A. The reason was in order to remedy the defect in the other patent."

Thus the complainants' own individual testimony shows that the last re-issue, the one sued upon, was taken out *solely for the purpose of enlarging the claims.* But he offers no reason, *and gives no excuse for his delay* in not applying for a re-issue with the same expanded claims within two years from the date of the original patent.

Unless this case is to be excepted from the rule which the Court has laid down and adhered to in other cases, the point here made is fatal to the complainants' cause, and the judgment of the lower Court must be reversed, with directions to dismiss the complainants' bill. That the first claim of the re-issue, which was the only claim that was in the original patent, has not been infringed by the defendants is decided by the Court and is also proved by the testimony in the case. The Court finds that only the second and third claims have been infringed.

See transcript, latter clause of folio 32, also, folio 56, where the same finding is repeated in the second interlocutory decree.

If the foregoing point is well taken, it disposes of the case in the appellants' favor, and the additional points contained in our assignment of errors and hereinafter discussed, need not be noticed. In excess of caution, however, we will present our additional points.

No Infringement.

In passing upon the question of infringement in this case, it is necessary to first construe the complainants' patent and ascertain what is covered by the last two claims, which are decided to be infringed. The state of the art is a very important factor in the construction of the patent in this case.

Before the complainant made any attempt at his invention, there were many hydraulic mining machines in practical and extensive use in hydraulic mining, with which the complainant was well acquainted. Many of these machines were what are called in the evidence "single jointed" machines. These single jointed machines had two joints in one, and were so constructed as to have a universal motion of the nozzle within a certain range of motion. By this we mean that the end of the nozzle could be raised or depressed, or turned sidewise to the right or left, so as to direct the stream that was passing through it to any spot on the mine desired. There was a limit, however, to the distance to which the nozzle could be raised or depressed in these machines, just as there is in the complainants' machine. This limit was not reached, however, before the nozzle was deflected as far as was necessary for all practical purposes. There is the same limit to the deflection of the nozzle in the complainants' machine that there was to the deflection of the nozzles in most of the prior machines. In fact, some of the prior machines furnished a greater range of motion for directing the stream to different points than did the

"Chief," which was the name given by the complainant to his machine. Nearly all of the machines made have been christened by some name by which they became known to the mining community. Two classes of prior single-jointed machines were made by the defendants Hoskin, which were called respectively the "Dictator" and the "Clipper." The defendants Craigs, made two kinds of prior single-jointed machines, which were named respectively the "Globe" and the "Victor."

Another single jointed machine was made at Nevada City where Fisher resided by one Watson, which was called the "Champion." The Globe machine had a regular "ball and socket" joint. The back end of the nozzle or pipe spread out so as to form a section of a sphere or ball. The body of the machine was a large hollow globe or sphere with an opening at its lower side for a connection with the water pipe from the fountain head, and on its upper side was another opening through which the nozzle pipe passed until the ball section at its butt end came in contact with the inside of the hollow sphere and formed the ball and socket joint. The upper opening mentioned was large enough to allow the nozzle pipe to turn in every direction as far as was necessary, in order to change the direction of the stream as might be desired while mining. In the Globe machine the greater the pressure of the water the closer the ball and socket joint would be pressed together. In several of the other prior single-jointed machines the spherical section on the butt end of the nozzle pipe was extended so as to form a hollow hemisphere, the concave side of which was fitted to the outside of the spherical end or head of the body of the machine. An inverted flange around this body served as a track on the under side of which ran friction rollers. These rollers were connected by means of iron ears or straps to the hemisphere of the nozzle pipe and held it firmly against the spherical head of the machine, and this formed a ball and socket joint, *but with the socket outside of the ball.* As the rollers ran around the inverted flange the nozzle pipe could be carried entirely around the horizon, while the ball and socket connection permitted the nozzle to be moved up and down. This class of machines *furnished the same kind and extent of motion that were furnished by the complainants' subsequent "Chief."* The swivelling joint of the "Chief" is operated by the inverted flange with friction rollers underneath, a little differently constructed, but on precisely the same mode of operation as was the swivelling motion of the "Victor," and the

'Champion," and "Dictator," and Clipper machines already mentioned.

In the "Dictator" machines, which were made by the defendant Richard Hoskin, the joint was composed of a spherical head on the body of the machine and the lower or butt end of the nozzle pipe, which was formed with an enlargement in the general form of a hemisphere. This enlargement was made with the concave larger than was necessary to fit the ball of the body of the machine. On the inside of the enlarged hemisphere which formed the butt of the nozzle pipe was an internal flange, the inner circumference of which was just large enough to move freely over the said spherical head. The inverted flange already mentioned and friction rollers, which were held by central pivots to the lower end of the nozzle butt, held the two parts together as already described. A leather packing was secured to the internal flange mentioned, and the whole made a water-tight joint that was easily operated. Hoskin describes this joint very appropriately as a "cup-flange and packing." It is the same kind of a joint as they used for the upper joint of the "Little Giant," excepting that the inverted flange and friction rollers are not used in the "Little Giant." This joint Richard Hoskin invented, and there is not any portion of Fisher's invention in it. This, as stated, is the upper joint substantially of the "Little Giant." The "Little Giant" is the only machine that is charged or decided to be an infringement of the complainants' patent in this case. The lower or swivelling joint of the "Little Giant" is held together by an iron or steel bolt going vertically through its center. No friction rollers are used in it, and there is none of the patentee's construction to be found in that joint.

The "Clipper" single-jointed prior machine was made with a spherical head, as mentioned, and it also had an inverted flange. Beneath the inverted flange was a strong iron ring, to which the butt of the nozzle joint was attached by ears and two central pivots. Between the iron ring and the inverted flange were three friction rollers placed so as to distribute the pressure of the rollers against the inverted flange among more roller bearings. The swivelling joint of the complainant's patent is constructed with several friction rollers much in the same manner as was the swivelling joint in the "Clipper" single-jointed machine.

In all the single-jointed machines mentioned, excepting the "Globe," the enlarged hemispherical butt of the nozzle pipe was placed on the *outside* of the hemispherical head of the body of the machine, and the two parts were held together by an inverted flange and friction rollers, which furnished the swivelling motion for the machines, while the ball and socket connections furnished the vertical motion for the nozzle pipe. All of these machines were good, practical machines, and went into actual, extensive, practical use

Besides the several single jointed machines which were in use when Fisher made his invention, there were no less than three two-jointed hydraulic machines made and used for hydraulic mining, and Fisher was well acquainted with two of them before he made his invention. The "Allenwood" or "Goose-neck" machine, as it was called, was in very extensive, practical use, and Fisher himself had made some of them and had repaired others. We will refer to the evidence showing these things later on.

The upper joint of the "Allenwood" machine was of canvas instead of iron. *The shape of Fisher's machine was precisely like the "Goose-neck." The joints were in the same corresponding places in the machine, the bends of the pipes were the same, and in the same corresponding places, and the water passed through the two machines in precisely the same way and* *with the same effect.* I can perhaps better illustrate this resemblance between the Fisher machine (the Hydraulic "Chief") and the prior "Goose-neck" machines by referring to Fisher's own testimony and then to a decision which was rendered by the Circuit Court in 1874 in a case between the complainant Fisher and the defendants Richard Hoskin and R. R. Craig and Joseph Craig. In 1873 the complainant Fisher brought a suit against the defendants R. R. and Joseph Craig on his first re-issue of the same patent, the second re-issue of which is now sued upon. The machine, which was then claimed to be an infringement, was the same identical "Little Giant" machines that are now claimed to be an infringement, and none other. (Transcript, folios 601, 574 and 570.) Substantially the same defense was made in that case as was made in the present case, and in that case the defense was decided to be a good one.

The former case of *Fisher* vs. *Craig* mentioned, is reported in 3 Sawyer, from pages 69 to 80. From pages 73 to 77, the opinion demonstrates that the combination and arrangement of sections and joints, in the Allenwood machine, are the same as in the Fisher machine. On page 75 the opinion says:

"This (showing) is called the Allenwood ma-

" chine. It is prior in point of time and is owned " by the defendants. Now the Allenwood patent " has four different claims, *and it is anticipation of* " *the other in several particulars.*"

The foregoing proves that the Court in that decision applied the evidence of the state of the art in ascertaining what Fisher had invented. In doing so, the fact came out that Fisher was only an improver of a known machine, *and that his improvements were not of a functional character*, but were mere changes of a local construction, *which neither created nor developed any new kind of operation.* Whenever an old machine anticipates a later patented machine in some particulars, the patentee of the later machine *is not the first inventor of those anticipated particulars* embodied in his machine. *Deducting those anticipated particulars from his machine, and the remainder is his invention.* This is strictly applying the evidence of the state of the art according to the rule adopted by other Courts for ascertaining a patentee's actual invention.

Fisher testifies—See transcript page 210:

" Q. 42. At any rate, prior to your invention, you were familiar with the mode of operation of the Allenwood machine?

" A. Yes, sir; I was familiar with its mode of operation.

" Q. 43. What is the mode of operation of the Allenwood machine?

" A. The mode of operation of the Allenwood machine is to conduct the water from a tank down into this lower pipe, let it through—

" Q. 44 (interrupting). Well, it is intended to have a horizontal and vertical motion, is it not?

" A. It has a horizontal and universal motion.

" Q. 45. Does it not have a vertical motion?

" A. Certainly, it has a vertical motion.

" Q. 46. The lower joint in the Allenwood machine you would call a swivel joint, would you not?

" A. Yes, sir.

" Q. 47. By means of that you can get a horizontal motion?

" A. Yes, sir.

" Q. 48. And on account of the flexible sleeve shown on Exhibit J you can get a vertical motion, can you not?

" A. By using in that place any ordinary piece of hose you can get a vertical motion.

" Q. 49. By means of the lower joint in your machine you can give yourself a horizontal motion?

" A. Yes, sir.

" Q. 50. Your machine, then, has two motions—horizontal and vertical?

" A. Yes, sir.

" Q. 51. Both these motions are in the Allenwood machine, are they not?

" A. Yes, sir.

" Q. 52. Now compare Exhibit J and Exhibit BB. What is the difference between the two in their mode of operation and the results accomplished?

" A. The difference between the two is that in this machine Exhibit BB, the discharge pipe has a vertical motion up and down and stands by itself without whirling around and kinking up while the other machine won't.

" Q. 53. Instead of the flexible section, or joint, shown in the Allenwood machine, you have what you call the ball and socket joint?

" A. Yes, sir.

" Q. 54. And the object of that joint is to produce the same results as are produced by this flexible joint in the Allenwood machine, is it not?

" A. It produces the same results and a little more.

" Q. 55. You claim that it produces the same result in a better way; that is your proposition, is it not?

"A. Yes, sir; it produces the same result in a better way; it don't produce all the results as n the Allenwood machine; it ain't necessary.

"Q. 56. Take the respondents' machine, represented by the model Exhibit L, and state how many motions that has?

"A. It has two.

"Q. 57. It has the horizontal motion produced by the lower joint, or swivel joint, and it has the vertical motion, produced by means of the ball and socket joint?

"A. Yes, sir,

"Q. 58. What is the difference in the motions of those three machines—that is to say, all three of the machines represented by Exhibits BB, J, and L have those two motions, have they not?

"A. They all three have those two motions."

The remainder of the rule consists merely in construing his patent so as to make it just cover his invention, if it can possibly be done without doing violence to the language employed.

Commencing near the bottom of page 75, and continuing to page 80, and we find the following language in the said former opinion, viz:

"Conceding this (showing) in the 'Allen-
" 'wood' machine to be a joint, it is only a differ-

“ ent one from this in the Fisher machine, and
“ *Allenwood's third claim covers precisely the same*
“ *parts, and same combination of parts, as are covered*
“ *by Fisher's second claim, the only difference being in*
“ *the material and construction of the joints.*” * *

“ Now, then, all the elements—these two sec-
“ tions and these two joints and the pipe—are
“ the same in both; all of those are combined in
“ the two machines. They are arranged together
“ relatively in precisely the same places and for
“ the accomplishment of the same purposes in
“ substantially the same mode. *This joint in*
“ *Fisher's machine* (showing) *is simply a known me-*
“ *chanical substitute for that one in the Allenwood*
“ *machine.* It may be a better joint, and this
“ doubtless is a better machine, and possibly in
“ that respect may be patentable. I am not pre-
“ pared, and it is not necessary now to say
“ whether it is or not; *but you have all of the ele-*
“ *ments in the two machines, and combined in the*
“ *same way and for the same purpose*, and the latter
“ must in this combination be an infringement of
“ the first; *and if there is anything patentable in this*
“ (Fisher's machine) that does not exist in this
“ (Allenwood's); in that combination, *it is the*
“ CONSTRUCTION *of this joint;* because this (showing
“ Fisher's) is a differently constructed joint from
“ that (Allenwood's); *that, if anything,* IS THE
“ ONLY PATENTABLE THING IN IT. If you leave out

" of Fisher's claim the words 'constructed and,' " you have the same thing in both machines substantially: 'The two curved sections, A, B, " 'connected by a horizontal swivel joint, in combination with a nozzle connected by a semi-universal joint arranged substantially as set " 'forth.' *The construction of the joint is not claimed.*

" Now, the idea expressed in Fisher's claim is " to make a combination of the *two* joints, *instead* " *of one*, with the supply-pipe and the nozzle, and " that is precisely the same as the idea expressed " in Allenwood's third claim, and found embodied in his machine, and if there is any difference between the two claims, it is only in the " mode of construction and in the material of the " joints.

" But the idea of both claims is to have these " five elements or parts combined. This machine, " claimed to be an infringement (referring to defendant's), has substantially the same combination of similar parts as the *other* TWO complainants *and Allenwood's* (showing). Here is the " section which corresponds to this, and this to " this. Here is the joint which corresponds to " these two joints in the Fisher and Allenwood " machines. Here is this part which corresponds " to this portion. Here is a ball-and-socket joint " INSTEAD *of the semi-cylinder joint in complainants'* "*machine*, or instead of the flexible joint in "Allenwood's.

"Now, then, if there is anything in Fisher's "combination which is entitled to a patent over "that (Allenwood's), it is because Fisher has "substituted a better joint before known. It "depends merely upon a different construction "and material. In other words, a known *me-"chanical substitute has been used in his machine in "the place of one of the parts in Allenwood's*, which "performs the service better. But when we "come to that, the *defendants also constructed this "joint* (showing the infringing machine) DIFFER-"ENTLY *from that of either Fisher's* or Allenwood's. "So that we have the same elements, the same "parts and things combined, and the only differ-"ence is in the form or construction of one of "the common parts used in the combination.

"This, in the complainants' machine, is a plain "known mechanical substitute for that in the "Allenwood machine—that is all, though it is "differently constructed. If there is anything "in that claim that can be patented, *it is the form "or construction of the joint, and this, defendants' "joint* (showing), DOES NOT CONTAIN THAT FORM OR "CONSTRUCTION, but is only ANOTHER *well known "mechanical substitute for Allenwood's joint—a dif-*

"*ferent known substitute for the same thing from that* "*employed by complainant.* It seems clear to me, "when we come to analyze and compare the "claims of the patents relative to these several "machines, that the idea of the combination of "the two last, complainant's and defendants', is "embraced in the prior one of Allenwood; *and if* "*there is any difference, it is in the form and construc-* "*tion of this joint: and if that is patentable,* IT IS NOT "EMBRACED IN THE DEFENDANTS' (the infringing) "MACHINE, because this is in a different form, dif- "ferently constructed.

"In that respect, both of these joints in com- "plainant's and defendants' machines are really "but substitutes for this in Allenwood's. De- "fendants' is but a different known substitute "from complainant's for that in Allenwood's "machine. This, in defendants', may be better "or worse than that in complainants', but it is "only another known substitute for the same part "in Allenwood's machine.

"There may be an infringement by either up- "on that of Allenwood, and still be a better "machine, or it may be a worse machine. It "may be conceded for the purpose of this decis- "that Fisher used the same combination as Al- "lenwood, and that it may yet have a patentable

" element in it, but if there is a patentable ele-
" ment in this combination it is in the form and
" construction, by substituting a better known
" joint than this one of Allenwood's; but if so,
" *that particular construction is not found in defend-*
" *ants' implement.* The Allenwood patent is owned
" by defendants, and is the first machine embrac-
" ing the combination of the several parts. *This,*
" *then, in my judgment, is a protection to the defend-*
" *ants in their use of this combination, in the form*
" *adopted by them.*

" My conclusion is, that the second claim in
" complainant's patent is the combination of
" these five elements before mentioned, and that
" this combination is substantially in the Allen-
" wood machine, the Fisher machine and the
" Craig machine. Those five elements are in all,
" this, Allenwood's, being an anticipation of the
" complainant's machine. The latter in this par-
" ticular is not a different machine, unless that
" difference consists in the construction of one
" of these parts.

" The patentability of it, if any exists, con-
" sists in that change in the construction of that
" joint. If that construction is the only thing
" patented, *then this joint in defendants' machine has*
" *a different construction,* although this joint is a

" known substitute for those in both the other " machines (showing).

" My judgment is that this Allenwood's invention is an anticipation of this machine, so far " as the combination and claim is concerned, " other than the form of construction, and protects the defendants in the use of this, which " is of a different construction. If I am right in " this, and that is the conclusion I have reached, " after careful and thorough investigation of this " case, there must be a decree for the defendants."

The present claims of his patent, which the Court holds to be infringed, are as follows, viz:

" 2. A ball-and-socket-joint for connecting " the discharge-pipe of a hydraulic mining apparatus, with the end of a *swivel-section*, B, substantially as described."

" 3. The discharge-pipe, E, having a semi-" cylindrical or ball-shaped enlargement at its " base, in combination with a corresponding cup-" shaped socket, D, on the end of the horizontal-" ly *swiveling section*, B, substantially as and for " the purpose described."

The insertion of the words "swivel section" in the second claim, and "swiveling section" in the third claim, is all that makes those claims applicable to two-jointed machines. Leaving out the swiveling sections from the claims, and the claims would exactly apply to the prior single-jointed Globe machine made by the Craigs. This machine went into general and successful use.

In that old Globe machine there is "a ball-" and-socket joint for connecting the discharge " pipe of a hydraulic mining apparatus with the " end of a section substantially as above de-" scribed."

In it is also—

" The discharge pipe, having a ball-shaped en-" largement at its base in combination with a cor-" responding cup-shaped socket, on the end of a " section, substantially as and for the purpose " described."

While it is not fair to call the socket "cup-shaped" in either case, yet the socket in the Globe machine was concave and as nearly cup shaped as was the socket in the Chief, or any socket described in the complainants' patent.

The Globe machine had the real ball and socket joint.

We deny that Fisher had any right to add the swiveling section as a part of his combination, for the reason that he did not invent any such combination. What he did was to change the Allenwood machine by substituting his metal joint for the canvas joint. Now, stand the Chief and the Allenwood side by side, and run water through them both. In such case the swiveling section in the Allenwood will operate in all respects the same as the swiveling joint in the Chief. *Nothing that Fisher did with the upper joint in any way affected the swiveling joint.* There was no joint action between the swiveling joint and the *change which Fisher made in the upper joint.*

The Rice two-jointed machine also had the same combination in it, and Fisher was well acquainted with it before he made his invention. Fisher's own evidence shows this fact as well as the other evidence in the case. Beginning at folio 593 of the transcript, Fisher testifies as follows:

"Q. 130. Did you ever see a Rice hydraulic machine, represented by Exhibit G?

"A. Yes, sir.

"Q. 131. Did you ever see one before you made your invention?

"A. Yes, sir.

"Q. 132. Is the model, Exhibit G, a correct model of the Rice machine?

" A. Substantially correct.

" Q. 133. How many motions has that?

" A. Two.

" Q. 134. What are they?

" A. Horizontal and vertical motion.

" Q. 135. It has two joints, has it not?

" A. It has three, sir.

" Q. 136. What is the first?

" A. The first is a swivel joint.

" Q. 137. What is the second?

" A. The second and third are two trunnion joints.

" Q. 138. The two trunnion joints that you speak of operate as one joint, do they not?

" A. Yes; but they are two separate joints.

" Q. 139. The result of those that you call trunnion joints is to give the discharge pipe vertical motion, is it not?

" A. Yes, sir.

" Q. 140. The difference, so far as this part of the machine is concerned, about which we are talking, between the Rice machine and yours, is simply in the character of the joints, is it not?

" A. Yes; the difference betwixt the motions of the machines is on account of the character of the different joints.

" Q. 141. What is called the swivel joint is substantially the same in each, is it not?

" A. It is pretty much the same. The—

" A. The swivel joint—that horizontal joint.

" Q. 142. In lieu of what you call the two trunnions shown in the Rice machine, you use what you call the semi-cylindrical or ball and socket joint?

" A. Yes, sir."

If a party by changing an element in an existing combination changes the operation of the entire combination, then he may take a patent for a new combination. But if a party changes an element in an existing combination, and in so doing does not affect the action of the other elements in the combination, then he has made no new combination and has no right to a patent for any new combination. An aggregation of devices, all acting simultaneously, and operating with each to produce a desired result, may or may not constitute a combination within the meaning of the patent law. If the devices are of such a nature, and are so connected and arranged, that the action of the devices influence and assist or control the action of the other devices, then it is a combination. But if the devices are of such a nature and so arranged that each several device does its own work, and neither affects nor is affected by the action of any other device, then there is only an aggregation of devices, and not a combination. To put together mechanical devices so as to produce an action or operation never before known, involves invention. It is finding out something new. But to merely arrange known devices or machines in a line or in juxtaposition does not involve invention. Mechanics know how to do it, and doing it is not finding out anything new. It requires no invention to hitch a half dozen more cars on to the longest train of cars ever yet made up, nor would such additional cars produce any new kind of operation due to their acting in concert with the cars already attached to the train. The action of every car would be the same whether it was drawn alone or with others. A train of cars is a fair illustration of an aggregation of devices, acting simultaneously and in company with each other, but yet lacking that joint action necessary to a patentable combination, in which the operation of each device is affected, changed, assisted, or in some way influenced by the operation of every other device, so that the joint action produced is a new kind of action which could not be produced by using the elements separately.

To make a combination patentable there must be a joint action of the devices, or elements, which action is different in kind from the individual or aggregate action of the devices when used separately.

Reckendorfer vs. *Faber*, 2 *Otto*, 347. and several cases cited in the opinion.

Also, *Bump on Patents*, last half of page 77 and page 78.

I do not pretend that the action of the several joints and elbows, with the nozzle of the Fisher machine, is not a joint action due to the combination.

The several devices produce a result which could not be produced by them separately. In every sense of the term, they constitute a combination. But what I do say is, that that exact *combination* was in the Allenwood machine. That the entire *joint action* was as perfectly in the Allenwood as in the Fisher machine. That combining the necessary elements to produce that joint action was done by Allenwood, and *Fisher learned it from the Allenwood machine.* Fisher, therefore, could not and did not *discover* how to produce that combined action; but, on the contrary, he *learned* how. And while it may be true that Fisher made a change in one of the elements of the combination, so long as that change *did not affect the operation of the other elements*, so long his change did not make any *new* combination with those elements; and if his change did not make a new combination with those elements, of course it did not make any combination with them. His change simply left the old combination as it was. By changing one of Allenwood's joints, he *did not destroy Allenwood's combination.* Merely taking the ball-and-socket-joint from the old Globe machine and substituting it for the canvas-joint, in the Allenwood combination, was not invention. We are not, however, claiming that there was no invention in the semi-cylindrical joint which Fisher did make. *We have not used it*, nor, for that matter, have we used anything in the way of construction that he can with the slightest show of truth claim to have invented. The ball-and-socket joint was in the Globe machine, which was in general use, and a well known substitute for Allenwood's canvas joint at the time Fisher began inventing. The combination was in the Allenwood machine. The modification between the ball-and-socket joint and the upper joint used by the defendants, *in which the great friction of surfaces in contact is avoided*, was an invention of defendant Hoskin, and not of Fisher. That modification is not shown or hinted at in Fisher's patent. Fisher's patent does not show or hint at any form of ball-and-socket-joint different from that shown in the old Globe machine, and his semi-cylindrical joint has the same kind of friction, which is increased by the water pressure, as the ball-and-socket-joint has.

In fact, after subtracting the Allenwood machine from both the Chief and the Little Giant, there is nothing left in either, *except different construction, and the straighter passage of the stream through the Little Giant.* The new construction of the Chief is not in the Little Giant. In the Chief the swivel joint is made with an *inverted flange and friction rollers.* The Little Giant's swivel joint is held together by a *vertical central bolt without the use of any inverted flange or friction rollers.* It swivels much more easily and is more cheaply constructed in this regard than the Chief. The water passage through the bent parts or joints of Fisher's machine is of a uniform size and just about as crooked as the passage through the corresponding parts of the Allenwood machine, while in the Little Giant the water passage is greatly enlarged as it approaches the swivel joint, and the passage through the Little Giant is not nearly as crooked as in either of the other machines. The construction of the upper joint of the Little Giant is a modification of the prior joint of the prior Hoskin's Dictator, and *has not a feature of the modification made by Fisher in it.*

When the friction rollers in the single jointed machines lay opposite to each other, so that a horizontal line would pass through them, then those joints furnished a vertical motion only. In fact the nozzles of those machines never could move except in a plane vertical to a line passing through the pivots which connected them to the machines.

As a certain amount of surface of the ball is required in the ball and socket joints in order to furnish room for moving the nozzle up and down, the nozzle pipe must, of necessity, be much smaller than the ball enlargement; and when the ball enlargement is inside of the water pipe, it follows that the nozzle must be very much smaller than the water pipe. *The same principle applies to the semi-cylindrical joint of the Chief, and is the reason of its very small nozzle capacity as compared with its weight.* The Hoskin joint in the upper end of the Little Giant has its socket on the back end of the nozzle, and the *socket goes outside* of the upper end of the water pipe, and, therefore, the nozzle can be made as large as desired. This is the reason why *the capacity of the Little Giant is relatively so much greater than that of the Chief. In machines of any one given weight, the capacity of the Little Giant is one third greater than that of the Chief.* (See Trans., folios 167, 168). In view of all all these differences we are utterly at a loss to know or understand upon what possible theory or hypothesis of law, or fact, the Court now holds the defendants' machine to be an infringement.

We ask the Court to take, on the one hand, the prior Macy and Martin patented rifles, the Globe machine, the Allenwood Gooseneck machines, the Hoskin's Dictator, and the Clipper and Victor machines, *all of which were owned by defendants*, and the differences between the Little Giant and the Fisher machine, *which differences are also defendants' property*, and then lay its finger upon anything that is left in the Little Giant, *and find its counterpart in the Fisher patent, if it can be done.* On such an examination, can the Court turn over to Fisher *anything found in the Little Giant* without turning over to him something *that belonged to the defendants?*

We insist that the former decision of the lower Court was correct, and we ask this appellate Court to make the same close comparison which the Court formerly made, and we are confident that it will say that such former decision was right.

The former decision goes to and covers Fisher's *entire invention.* It declares in almost so many words, that there was none of his invention in the defendants' machine. If this was correct, and we insist that it was, then it was impossible for Fisher to re-issue his patent so as to make it cover any part of defendants' machine, unless he put into such re-issued patent something more than he invented. The evidence in this case is the same as in the former. The identical model of Fisher's invention, which was in the former case, is in this case. (Transcript, folios 569, 570.) That model is proved by complainants and conceded by both sides to be a correct model of his machine, and shows all the improvements and changes made by him. The same models of the defendants' machine, and of the Ellenwood and other machines, are in this case as evidence which were in the former case. (Transcript, folios 574, 570 and 601.) There is nothing different in this case from what there was in the former case, as to either Fisher's invention or the defendants' machine. Two of the defendants in this case were the defendants in that case. The issues in that case as to what Fisher *had invented*, and whether *any of his invention was in the defendants' machine*, were distinctly made, and were as distinctly decided in the defendants' favor. We now insist on this appeal as we did in the Court below, that the decision upon those issues in the former case is forever binding upon the parties to that suit and their privies. Fisher is one of the complainants now, and his co-complainant, Hendy, purchased his half interest in Fisher's patent *long after the Court had solemnly adjudicated that there was no part of Fisher's invention in the defendants' machine.* The same Craigs who were defendants in that suit are defendants in this, and the additional defendants are the two Hoskin brothers, who have been making and selling machines under a contract with Craigs, and paying a royalty on the patents owned by the Craigs. The parties to this suit are the parties and privies of the parties to the former suit, and no one else.

In that case it was decided that the new construction introduced by Fisher into hydraulic machines was not in the defendants' machine. The Court decided that, " If there is a patent-" able element in this combination it is in the " form and construction by substituting a better " known joint than this one of Allenwood's; but " if so, that particular construction is not found " in the defendants' implement."

The broad fact was *judicially* established by the foregoing decision that there was nothing patentable in Fisher's machine to be found in the defendants' machine. The defendants in that case having fought their battle once, and having obtained a final judicial determination of a fact, which no re-issues could effect—a fact which went equally to the merits of that case and of this—they and their privies have a right to repose under the protection of that judgment and forever invoke its power as a protection against any further harassing over the question as to whether anything patentable in Fisher's machine can be found in the defendants' implement, the Little Giant.

Is Fisher's last re-issue valid?

We think Fisher's entire patent invalid, on account of his claiming the ball-and-socket-joint, in it, when *he never invented any ball-and-socket-joint, and never applied in combination or otherwise any ball-and-socket joints to a hydraulic machine.* He does not know to-day how a ball-and-socket joint will operate in a hydraulic machine, except as he has learned it from others. There is no pretence on his part that he ever invented, or believed he had invented, the ball-and-socket joint, *or that he ever in any way applied, or believed he had applied, one to a hydraulic machine.* In this respect he is not even within the provision which allows a patentee to save his patent by disclaiming as to that part of which he believed himself to be the first inventor, but subsequently finds out he was not.

The state of the art shows that Fisher's patent covers nothing but mere details of construction. He did not introduce a single new motion or mode of operation into hydraulic machines, unless it is in those things which were in the original patent, and are now in the first claim of the re-issue sued upon, and which the defendants do not, and have not used. These are the lever and pawl, etc., for turning and holding in any desired position the nozzle of the machine. A newspaper cut of a Little Giant machine with a handle reaching backward so that the machine could be turned from the rear end, is in the Transcript, between pages 200 and 201. This cut is put in the evidence as Exhibit E E. This cut does not have any pawl or any other device that will hold it fastened in any given position. It would not, therefore, be any infringement of Fisher's first claim, even if the defendants had made a machine as shown in the cut after the patent was re-issued. The defendants did not, however, make any machines with those attachments after the patent was re-issued. (See Transcript, folio 681.) The patent, as to the second and third claims, must be limited to the specific devices named in them. The second claim only covers a combination connected with the nozzle *by a semi-universal* joint The defendants' machine has no semi-universal joint in it, and does not infringe that claim.

The second claim calls for a "ball and socket joint," etc. A ball and socket joint is defined to be:

" A joint formed by a ball working in a hollow
" cup or socket, which allows it a free motion *in*
" *every direction* within certain limits."

See *Knights American Mechanical Dictionary*, " Ball and Socket Joint." Vol. 1. p. 219.

The defendants' joint is *not* a ball and socket joint. It permits an up and down motion only.

The third claim of the patent calls for a "cup-
" shaped socket on the end of the horizontally
" swiveling sections," etc.

The defendants' machine had no socket—cup-shaped or otherwise—on the end of its swiveling section. By putting the butt of its nozzle on the outside of the spherical end of the swiveling section, it not only dispensed with the socket on such swiveling section, but it made a machine of one-third greater capacity. Constructing the Little Giant without that socket on the end of the swiveling section was a very great advantage over Fisher's invention. By putting a socket on the end of his swiveling section, Fisher injured the joint instead of making it better. The water in the Little Giant tends to press the joint apart, and this is because it is constructed without any socket on the end of its swiveling section. The water in Fisher's machine tends to press the joint together, and this is because he puts the socket on the end of the swiveling section. His own testimony is that the joints which the water tends to press apart, are the better joints. (See Transcript, folio 293.)

He also testifies that the water presses his joint together and thereby makes it work harder, while the contrary is the fact with the older joints in the Dictators, and Victors and Watson machines, also that the Little Giant was like the older joints in this respect instead of being like the patent. (See Transcript, folios 256 and 257).

At folios 573, 586, 587, 603 and 604, Fisher testifies that the Little Giant does not have any socket on the end of the swiveling section. It is true that he claims that the concave on the nozzle butt that fits over the spherical head of the swiveling section is the equivalent of it. But this is not so; for two reasons, viz., first, such joints were old and therefore were no part of his new invention, nor any equivalent thereof; and second, the concave on the expanded butt of the nozzle is on all the nozzles, whether they fit inside or outside of the head of the swiveling section; Fisher's nozzle butt has this concave the same as the Little Giant. He made an *additional* socket in his joint, and has made it an element in his third claim, and it is of *the essence of his invention.* This socket the defendants have not used.

We respectfully submit that the charge of infringement is not sustained by the facts.

Exceptions to the Master's Report.

In making up the damages in this case it was found that no damages for the complainants could be found, under the testimony, based upon any other rule than that of allowing as damages the profits made by the defendants by their infringement. The Master undertook to apply this rule, and no other. During the term of the reissued patent the complainants had not been in the business of manufacturing or selling the machines, and the infringement did not interfere with them or their business in any way. The damages, therefore, if there were any, had to be evolved from the profits made by the defendants by the use of the invention.

In attempting to arrive at these profits no rule of law was followed that could be found in any decision of this or any other court, either in the introduction of the evidence or in the use made of that evidence in arriving at the results. It was a well known fact that the invention of Fisher had no pecuniary value whatever, and that none was proved for it, and that none could be proved for it. Not the slightest attempt was made to prove any money value for the *invention*. Not a single witness undertook to give any estimate of its value or to furnish any data upon which any money could be estimated for it. The whole of the complainants' invention was in the machine made by him which was called the hydraulic "Chief." So far from undertaking to prove the value of the invention the complainants' counsel actually *objected to such evidence as irrelevant and immaterial.* At folio 168 of the transcript, while the testimony was being taken on the question of damages, the complainants' counsel says:

> "We object to all testimony regarding the *Fisher machine as irrelevant and immaterial.*"

Inasmuch as the whole invention was in the Fisher machine, according to all the testimony bearing on the case, such an objection looks very strange. It looks, however, much worse when we examine further and find that the Master took practically the same view and gave no importance to any testimony as to the value of the *invention* whatever What is still worse the Court subsequently did the same thing. About the only point that we could see in the trial of this case was the idea that Fisher had to be provided for out of the defendants' earnings. Any thing and every thing that militated against this theory was decided against us as immaterial and irrelevant. If there was a single rule of law or equity as fixed by the law and decisions of this Court that was followed in the taking of the accounting in this case, we ask the complainants' counsel to point it out in his answer to this brief. We hope he may find one. We have not been able to discover it, if in fact it exists.

As a general proposition the complainants tried to prove what the profits were on the *entire machine* — the Little Giant—*that was made by the defendants.* No attempt was made to fix the value of the *Fisher invention* in the Giants. The rule that the value of the *invention* must be proved was totally ignored. It *had* to be ignored in order to find for the complainants. The defendants proved that the Fisher invention was not the entire improvement that made the machines valuable, whether applied to the defendants' Giant or to Fisher's Chief. They proved that the rifle patent, and not the Fisher joint, controlled the business. Fisher testified that he sold his Chief at a very large profit, but that he so sold them *with the rifles in them*, which were covered by the *defendants'* patent and which he *had no license to use.* See transcript, folio 240.

This was supplemented by the defendants showing that *Fisher had been enjoined from using the rifle patent;* and also that those very Chiefs which he had so sold were afterwards compelled to pay, and did pay, *as a royalty on those rifles* fully as much as the *entire profits which Fisher had made on the whole machines.* See transcript, folios 178 to 181.

From folios 129 to 140, of the transcript, defendant Hoskin testifies that the prior single-jointed machines were fully as good as the two-jointed machines. That they could be made cheaper and that defendants had the full right to make them. That by virtue of the rifle patent the *defendants* had a monopoly of the hydraulic machine business. That Fisher and others had been enjoined from using the rifles and the Chief was not on the market. That no machine was good for anything without the rifles. He gives the names of the mines where the two-jointed machines were used, and where they continued to be used after the two-jointed machines were on the market. He shows that the Fisher invention was worthless, and that the defendants had not saved or gained anything by making two-jointed machines instead of the one-jointed machines which they had an undoubted right to make.

This testimony is not contradicted anywhere, but is fully sustained and corroborated by an abundance of other testimony which we will point out more specifically hereafter.

We again repeat that *no proof, nor any attempt at making proof of the value of the complainants'* invention was made by the complainants. They attempted to prove the value of the *entire Fisher machine* with the infringing rifles in them; and they also attempted to prove the value of the *defendants' entire machine* which contained the rifles and other improvements which belonged to the defendants, and which the complainants had no right to use. But nowhere did the complainants make the slightest attempt to prove the value of the Fisher invention; nor did they make any attempt at proving what the defendants had gained or saved by the use of the invention. *On the contrary they purposely avoided and objected to all proof of this kind.* The wonder is that the Master, and after him, the Court should sustain such a monstrous violation of law, and with their eyes wide open, become participants in an attempt to transfer the defendants. hard earnings to the complainants on the flimsy color of an undefined and undefinable pretext based on no rule of law or of right, to the effect that, because the defendants had made a machine that was covered by many patents, of which the complainants owned one, and the defendants owned the others, they, the complainants, could recover from the defendants all of their own earnings and all of the money value of all of their own patented rights.

The rule is well settled that the defendant is only liable in an accounting for the advantages which he has gained *on account of the use of the patented invention*, nothing more. The rule is well stated in *Carter* vs. *Baker*, first Sawyer, on page 527, viz: "The profits made by the defendants,
" in selling the machines, are proper to be given
" as a part of the damages; for the right to make
" and vend the *patented machine* being the *plaintiffs'*
" *property*, the profits resulting from the sale of it
" ought to belong to them. *But as mere profits,*
" *the complainants are only entitled to the profits of the*
" *sale of their machine* AS PATENTED. If the defend-
" ants have improved their machine, and *if any of*
" *the profits are properly credited to the defendants'*
" *improvements, they do not belong to the complainants.*"

The authorities are uniform upon this question. On page 448, 1 B and A, the Court says: "What effect should the *improvement of the de-* "*fendant's* have upon the question of complain- "ant's profits. It undoubtedly *added to the ex-* "*pense* of laying the pavement, and to that extent "*diminished the profits* of the whole work. *If it* "*had lessened the cost, it is quite evident that the* "*amount thus saved ought to be credited to the im-* "*provement.*"

The universal rule is that the complainant can recover *the profits due to his invention alone.* He can recover nothing for the improvements made by others, whether those improvements are patented or not. Not only is this so, *but the complainant must prove by actual evidence, what the value of his invention is.* The value of his invention must not be guessed at, nor conjectured. IT MUST BE PROVED, and if it is of such a character that it cannot be proved, *then he can recover nominal damages only.* If the patent covers a part only of the machine which infringes, the recovery must be limited accordingly.

Philp vs. *Nock*, 17 Wall., 460.

Bell vs. *Daniels*, 1 Fisher, 379 and 380.

Mowry vs. *Whitney*, 14 Wallace, pages 650 to 653.

Littlefield vs. *Perry*, 21 Wallace, pages 228 to 230.

Carter vs. *Baker*, 1 Sawyer, page 527.

Case vs. *Brown*, 2 Fish., first half page 275.

Wayne vs. *Holmes*, 2 Fisher, pages 29–30.

Cox vs. *Griggs*, 2 Fisher, page 178.

Buerk vs. *Imhausen*, 2 B. & A., 452, see pages 455–456.

Forbush vs. *Bradford*, 1 Fisher 317.

See end of case on page 320.

Conover vs. *Mers*, 6 Fisher, 506.

Cawood Patent, 14 Otto, page 710.

Black vs. *Munson*, 2 B. & A., 623, particularly last half page 624 and first half 625, where it says:

" It is the duty of the *complainants* to make " proof of the profits arising from the use of *that* " *portion* of the furnace which is included in " Thompson's improvement."

Also, *Ingels* vs. *Mast*, 3 B. & A., 24.

Jones vs. *Morehead*, 1 Wall., page 165, where the amount was reduced to nominal damages.

Magic Ruffle Co. vs. *Elm City Co.*, 2 B. & A., pages 511–512.

La Baw vs. *Hawkins*, 2 B. & A., 361.

Webster vs. *New Brunswick Carpet Co.*, 2 B. & A., pages 60 to 71.

Garretson vs. *Clark*, 4 B. & A., 536, especially the first half page 539, where Judge Blatchford says:

"A *plaintiff* is required to separate between "the patented parts of what the defendant makes "and sells, and the unpatented parts," etc.

Star Salt Caster Co. vs. Crossman, 4 B. & A., 566, especially last half page 567 and first part of page 568.

Ingersoll vs. *Musgrove*, 3 B. & A., 304.

Schillinger vs. *Gunther*, 3 B. & A., last part of page 497, and top page 498.

There is another principle which is laid down in the case of *Robinson* vs. *Blake*, 4th Otto, pages 733 and 734, which we think is applicable to this case, viz: "It remains to consider the question of "damages. A few remarks upon that subject will "be sufficient. * * * No license fee charged "by the complainant is shown. The burden of "proof rests upon him. Damages must be "proved. They are not to be presumed. The "complainant made a profit of forty dollars an "inch on the width of the jaws of the numerous "machines he had sold, but inventions covered "by other patents were embraced in those machines. It was not shown how much of the "profit was due to those other patents, nor how "much of it was manufacturer's profit. The com-

"plainant was therefore entitled only to nominal "damages. These the Court gave him. It was "all the state of the evidence warranted, it would "have been error to give more."

In this short extract is laid down the two principles, that the burden of proof to show what the damages were is upon the complainant, and that he *must prove* his damages; that they are not to be presumed. The other principle is, that where there are *several inventions* in the same machine it must be shown *how much of the profit was owing to the patented improvements* which the defendants used; and that *if that is not shown, the complainant will be entitled only to nominal damages*, notwithstanding that the evidence does show how much profit the complainant made on his entire machine.

In Fisher's patent sued on there are three claims. The Court finds that the defendant has infringed the second and third claim, *but not the first*. It took the entire three claims of Fisher's patent to make a complete machine; and even then his machine was not so far complete that it was a practical working machine. It still lacked the vital element of the rifles in the nozzle. But as complainant has only shown that defendants used a part of his invention, *and has made no at-*

tempt to show what the value of that part of his invention was, has made no attempt to show that the defendants by using the combination described in the second and third claim made any profit out of that use, he is entitled to recover only nominal damages.

Beyond this, it is shown that a vital element of all these machines was a device for which the complainant held a patent, viz: the rifle. The defendants made several inventions, patented and otherwise, which they used in their machine which were no part of Fisher's invention, and for which he was not entitled to recover any compensation on account of defendant's use of them. Among those were the rifle, the cup, flange and packing of Hoskin, the bolt connection of the two parts of the horizontal joint, the placing of the butt of the nozzle on the outside of the upper end of the second joint instead of in the inside *by which they were enabled to so construct the Little Giant as to save about one-third of the weight of the machine* as compared with Fisher's Hydraulic Chief, which, of course, resulted in an immense saving of material. Under the authorities Fisher was not entitled to recover any compensation for the use of any of those improvements, since they were no part of his invention. HE HAS NOT MADE THE SLIGHTEST ATTEMPT OR INTRODUCED THE LEAST PARTI-

CLE OF EVIDENCE TO SHOW WHAT THE VALUE OF HIS INVENTION WAS, or whether the defendants gained anything by its use, or whether they suffered a loss by using it. The defendants have proven by several witnesses that they actually lost money by making the two-jointed machine, and *no attempt has been made to contradict this proof.*

Both the said second and third claims are for combinations which may be used in a two-jointed hydraulic machine, but they cannot exist in a single-jointed machine. No single-jointed machine ever made can be an infringement of the patent. This is now an admitted and an established proposition.

It was shown by the evidence that the defendants had a number of patents on hydraulic mining machines. They had successfully prosecuted infringements upon their patents, and by virtue of their patents they had held a monopoly of the hydraulic mining machine business ever since about the year 1872. They had shut the complainants' patented machine, known as the "Hydraulic Chief," out of the market with the others.

The patent of most power which they held was a patent granted to Macy & Martin on the eighth day of December, 1863, which covered a device in the machine nozzles for straightening the stream. This device has been named the "rifle," and the patent has become known as the "rifle patent." Besides this patent, the defendants amongst themselves owned several other patents, which, in the month of October, 1871, they concluded to pool, and on the said day made and entered into a written contract. By an oversight of some kind this contract was not printed in the transcript, and we will print it here. The following is a copy, viz:

This Indenture, made the 24th day of October, 1871, between R. R. Craig and Joseph Craig of the City and County of Nevada and State of California, parties of the first part, and Richard Hoskin of Dutch Flat, County of Placer, same State, party of the second part.

Whereas, the said parties of the first part are the owners of certain letters patent of the United States, to wit: No. 97,699, issued to the parties of the first part for Improvement in Flexible Pipe Couplings, and dated December 7, 1869, and No. 40,847, issued to Charles F. Macy and Seth Martin for Improvement in Hose Nozzles, and dated December 8, 1863; and the said party of the second part is the owner of Letters Patent of the United States issued to him for Pipe Coupling, No. 105,456, and dated *July* 19, 1870.

And whereas, differences have existed between the said parties in relation to said patents and various alleged infringements thereof—

Now, therefore, these presents are to witness that all said differences have been mutually adjusted, compromised and settled, and the said parties as the result thereof do hereby covenant, promise and agree to and with each other, and bind themselves in, by and according to the following articles, to wit:

ARTICLE 1ST.

The legal title to each of the letters patent aforesaid shall be passed to, held by, and suits for the infringements of said patents commenced and prosecuted in the names of said parties of the first part.

ARTICLE 2D.

In all such suits to which both parties consent, all expenses shall be paid and borne equally by the said parties, and all damages recovered and collected in or by said suits, and all sums received from the defendants in said suits in compromise after suit commenced shall be equally divided between said parties.

ARTICLE 3D.

Either party hereto may compromise without suit with an infringer of either of said patents for such sum, or on such terms, as said party may deem proper, and all receipts on said compromise shall be divided as follows: On all of what are known as the Watson machines 60 per cent. to the parties of the first part, and 40 per cent. to the party of the second part; and on all of what are known as the Fisher machines 75 per cent. to the parties of the first part, and 25 per cent. to the parties of the second part. All other receipts on compromise to be equally divided between said parties.

Article 4th.

The market for all machines of the kinds described in any one or more of said patents shall be supplied as follows: Said parties of the first part shall furnish and deliver to said party of the second part such machines in such numbers and of such patterns as he may order, on reasonable notice, complete in every respect except piping, rifle and packing, at the lowest market rates at which the same can be afforded—that is, at the lowest actual cost.

Article 5th.

All patterns at present belonging to either party to be made use of so far as practicable, and no charge made for the same. The party or parties desiring new patterns shall furnish or pay for the same. All patterns renewed by reason of use shall be at an equal expense to each party. No royalty shall be charged on experimental machines.

ARTICLE 6TH.

Said machines shall be delivered at the place of manufacture, at the option of the party of the second part, either to himself personally at the foundry where made, or to the depot of the most appropriate freight conveyance at said place, which place shall be either Marysville, San Francisco, or other like convenient center of supply in the State of California as said parties of the first part may select.

ARTICLE 7TH.

Within thirty days after the time of said delivery the said party of the second part shall pay to the parties of the first part, or their order, the costs as aforesaid, and also a royalty, as follows, to wit: On each machine, having an inlet to the joint of 7 inches or less in the clear, $35; on each having an inlet of 7 and not more than 9 inches, $50; on each having more than 9 and not over 11 inches inlet, $75; and on each having an inlet over 11 inches, $100. Machines of the first-named class shall be sold for a sum not exceeding $130 each; of the second class, a sum not exceeding $200 each; for the third class, for a sum not exceeding $250; and the fourth class, for a sum not exceeding $300.

Article 8th.

The said parties of the first part shall neither make nor sell, or give others any license or authority to make, sell or use any machine or machines under either of said patents, or after the plan described therein, and all machines made, sold or used by the parties of the second part, after the plan described in either of said patents shall be deemed and held to have been so made, sold and used under this agreement, and be accounted for accordingly.

Article 9th.

Each of the machines which the parties of the first part now have on hand, not exceeding fifteen in number, may be sold by them, and after deducting the royalty as aforesaid and the costs thereof, not including costs of patterns, they shall pay the balance of sale price to the said party of the second part.

Article 10th.

As part of the consideration on which this contract rests, the party of the second part has this day paid to the parties of the first part $500 in gold, and has given his note for $1,000 payable in six months.

Article 11th.

This contract to continue in force during the life of the patent issued to the said Macy and Martin.

Article 12th.

Neither this contract or any interest under it, shall be transferable, either voluntarily or involuntarily, bankruptcy or assignment, but the interest to the parties to it shall be subject to testamentary disposition and go to heirs, administrators and executors.

Article 13th.

All money transactions and obligations shall be made, paid and discharged in gold coin of the United States only.

Article 14th.

Any violation of this agreement committed by either of the parties of it, willfully and in bad faith, and to avoid its provisions and to deprive the other party of his or their rights thereunto, shall terminate this contract, and from thenceforth all the letters-patent aforesaid shall become and remain the exclusive property of the said other party.

The party of the second part is hereby released from the payment of the first royalties which shall become due from him to the amount of $250 and interest thereon from date at one per cent. per month.

In witness whereof, we have hereunto set our hands and seals, this 24th day of October, A. D. 1871.

R. R. Craig,
Joseph Craig,
Richard Hoskin.

The Master filed his report on the 21st day of May, 1883. In the report the Master refers to the foregoing contract between Hoskin and the Craigs, and says:

"Prior to the 24th day of October, 1871, "Richard Hoskin and the Craigs had for some "years been engaged in the business of manu-"facturing and selling machines of this character. "Upon that date a contract was entered into "between them, *the practical result of which has been* "*to give to respondents Hoskin the monopoly of that* "*business during all the time since the date of Fisher's* "*infringed re-issued patent.*"

"Although the experience of said respondents "has made them acquainted with, and they had "the right to make and sell machines the best "adapted to perform the required work, with the "exception of a machine embracing the com- "plainants'," etc.

I quote the foregoing for the purpose of showing that according to the Master's report, as well as in accordance with the evidence, *the defendants had a monopoly of the hydraulic machine business by virtue of the patents which they owned*; and, second, that they had the right to make and sell all the best single-jointed machines known, viz: the Dictators, the Victors and the Clippers. It adds something to the conclusive force of these two undisputed facts to know that the Master's conclusions and the evidence entirely agree in regard to them.

The foregoing contract and the patents named therein gave the defendants the entire monopoly of the hydraulic machine business, yet neither that contract nor any of the patents named therein *included any part of Fisher's invention or Fisher's patent.* The contract does not mention or refer to any two-jointed machine, nor any patent on two-jointed machines. Therefore *neither his invention or patent assisted in any way in securing the monopoly to the defendants.* If they derived any advantages, from the infringement, *the securing of the monopoly of the business was not one of them.*

It was proved on this accounting that the defendants Craig had neither made, used or sold any hydraulic mining machine since the date of the complainants' re-issue, and they are not held for any accounting or damages by the Master. The Craigs received their royalties, but the Hoskins alone carried on and did all the business.

The Master has brought in against the Hoskins the entire amount of gain which they made in carrying on the business of making and selling the Giants after the date of complainants' re-issue. No allowance is made to them for the rifle or other patents, or for their own improvements, or for their personal labor or personal expenses. The Master finds that during the whole period of their monopoly they have made only infringing machines, "*and they have left open to the miners no*
"*other way of supplying their needs in this direction.*"

This finding of the Master, taken in connection with the evidence, shows how fully and thoroughly the rifle patent controlled and monopolized the hydraulic machine market. It is established by the testimony that Fisher's invention was utterly useless without the rifles. The injunction against Fisher since 1872 only restrained him from using the rifles. It left him free to use his invention if he could do so without the rifles. But he could not do it. He could make no use of his invention whatever unless he could use the rifles. The rifle patent banished the Fisher machine from the market—from 1872 forward. This is an undisputed fact proved in the case. Even Fisher himself swears, in regard to his machine:

> "For myself, I don't think it was a practical "machine without some device to straighten the "stream." (Transcript, folio 283.)

The Master quoted from *Manufacturing Co.* vs. *Cowing*, 15 Otto, 253, the following:

> "If the complainant's improvement is required "to adopt the infringing machine to a particular "use, and there is no other way open to the pub-"lic of supplying the demand for that use, then "it is clear the infringer has, by his infringe-"ment, secured the advantage of a market he "would not otherwise have had, and that the "profits of this advantage are the entire profits "he has made in that market."

The Master's report follows the above quotation, by asserting that the success of the defendants' machine, and the monopoly of the defendants Hoskin were NOT to be altogether attributed to their adoption of the Fisher improvement, *but they were owing*, IN GREAT PART, *to their using and having the right to use the Macy & Martin rifles.*

Yet in his final findings, the Master has in fact applied the foregoing rule, just as though the Fisher improvement was of the all-controlling nature mentioned in the foregoing quotation, since he has brought in against the defendants Hoskin as the profits received by them for the use of Fisher's invention, every cent of gain made by them over their actual expenses in their manufacture and sale of the Giants from and after the date of the complainants' re-issue.

The evidence, however, shows that Fisher's invention had nothing to do with monopolizing or controlling the market. The defendants had three single-jointed machines, either one of which was better than Fisher's machine, and not much, if any, inferior to the Giants, with which they could have supplied the market. The evidence already referred to, and which I will hereafter refer to at length, is full and everwhelming *and uncontradicted*, to the effect that three single-jointed machines owned by and open to the defendants to use, were good, practical machines that went into extensive use. Some of them were used for many years side by side with the Giants, and did equally as good work and were just as well liked as were the Giants. THE EVIDENCE IS ALSO FULL AND UNCONTRADICTED THAT THE DEFENDANTS COULD HAVE SUPPLIED THE MARKET WITH

THE SINGLE-JOINTED MACHINES WITH JUST AS MUCH ADVANTAGE TO THEMSELVES AS THEY GAINED BY MAKING THE TWO-JOINTED MACHINES. This evidence is referred to fully hereinafter, and the Court will see by that evidence that my statements here are not overdrawn.

It was the rifle patent, and the rifle patent alone, that monopolized and controlled the market. The defendants owed their monopoly to the rifle patent, and to that alone. They had other patents which secured to them valuable improvements in hydraulic machines, but they had no other patents that would drive every competing machine of every kind out of the market, and leave them as the only parties from whom the miners could get hydraulic machines of any kind, except the rifle patent.

Applying the rule of the United States Supreme Court in the said case of *Manufacturing Company* vs. *Corning*, quoted by the Master, and it is plain that the whole profits from the machines belonged to the rifle patent. It was the rifles which were "required to adopt" all the hydraulic machines "to a particular use, and there" was "no other way open to the public of supplying "the demand for that use," and "it is clear the" defendants had, by their ownership of the rifle patent, "secured the advantage of a market" they "would not otherwise have had, and that the fruits of this advantage are the entire profits" they "have made in that market."

The above rule would of course be subject to the condition that the defendants did not, in fact, save anything in the cost of manufacturing or transporting or selling the Giants by using Fisher's invention, and also that they gained by getting a larger price for the machines on account of such use. *But neither of these conditions occurred.*

As I hereafter make a full reference to the evidence taken on the accounting, it is not out of place here to remark that there is not a sentence or word or letter in the testimony that tends to show that the defendants *got any higher price* for the two-jointed machines than they would have got for the single-jointed machines, nor that they *sold any more* than they would have sold of the single-jointed machines, nor *that they saved anything* in the cost of manufacture or transportation, or in selling, because they made and sold the two-jointed instead of the single-jointed machines. The defendants have put in evidence showing the opposite to be the truth. As to the comparison with the Fisher machine, it is shown to be about one-third heavier than the

Giant. The natural result seems to follow, that if defendants gained nothing by making the Giant instead of single-jointed machines, they certainly must have lost heavily if they had made the heavier Fisher machine, which, of course, included his whole invention.

The complainants, by their testimony, undertook to show that the *Giant* (not the Fisher) was the best machine known; that the principal feature of the Giant was its being two-jointed instead of single-jointed; and that it had driven all other machines out of the market. The complainants ignored and the Court shut its eyes to the fact that it was the *rifle patent and not the two-jointed patent that drove everything else out of the market.* It was the rifle patent that drove Fisher's Chief double-jointed and armor-clad, with all the security that complainants' patent could give it, out of the market, and compelled the Chiefs already in use to pay as a royalty the full profit made on their manufacture and sale as the price of their being allowed to live at all. The rifle patent was also effective in driving out of the market Watson's "Champion," a single-jointed machine. "Chiefs" and "Champions," whether double-jointed or single-jointed, fled the market in perpetual banishment before the resistless power of the rifle patent, or paid to its majesty a subordinate subject's heavy tribute. All this the evidence fully establishes, and the Master's report does not contravene any of it. The theory of the Master's report, as I understand it, seems to be that as Hoskin made and sold only two-jointed machines after the complainants' re-issue, that he is thereby estopped from denying that the whole value of the Giant was due to its being double-jointed, notwithstanding that the evidence shows, and the truth was, and the Master finds, that the value of the Giant was owing in great part to the rifles.

The Master in fact goes on in his report to find the value of the rifles generally, but makes no attempt to find out what advantage the use of that rifle patent *was to the defendants Hoskin in securing to them the monopoly of the business or in the manufacture and sale of the Giant.* He ascertains and allows to Hoskin, *as a part of their expenses, what they actually paid out in cash* to the Craigs under the contract Exhibit 1, hereinbefore printed, but he makes no attempt to find what advantage the use of those rifles *were to Hoskin.*

The Master, in effect, decides that the entire profits of the manufacture and sale of the Giants were owing to two patents, viz: the rifle patent and the Fisher patent. His business was to find out what money advantage the defendants Hoskin had derived after September 2, 1879 (the date of complainants' re-issue), by the use of the Fisher *invention. The complainants' did not undertake to furnish any evidence or data upon which the Master could make any computation of such advantage.* Probably they recognized the utter impossibility of furnishing such proof or data. They had no established license fee, and no evidence or data could therefore be obtained or furnished from that source of legal evidence. The Giant could not be made any cheaper on account of being two-jointed. So no data or evidence could be obtained from the source of cheaper manufacture. The Giants could not be, and were not, sold for any higher price on account of containing Fisher's invention. A single-jointed machine would sell just as high as the two-jointed machines. So no evidence of profits resulting from any higher prices being obtained for the machines could be shown. The plaintiff then undertook to show that the two-jointed machines were better *for the miners* than were the one-jointed machines, and then claimed that if the miners liked the two-jointed machines best, that only two-jointed machines could be sold, and therefore all the profits made in the manufacture and sale of the machines belonged to the Fisher invention.

In this attempt, however, the proof entirely failed. The proof is that the rifle patent created and held the monopoly of the manufacture and sale of all hydraulic mining machines. Also that the defendants held the rifle patent, and thereby held the monopoly even to the full extent of driving Fisher and his machine out of the market. And further, the proof shows that the defendants having such monopoly, would have sold single-jointed machines in as large numbers and at as great a profit, had they made and put them on the market, as they did of the two-jointed machines.

The Master, being of course unable to get any data upon which to base an accounting out of the complainants' testimony, had recourse to the Craig-Hoskin contract Exhibit 1, put in evidence by the defendants, and printed in this brief, pages . His report says:

> "The value of the infringing machine as a
> " marketable article is properly and legally attrib-
> " utable to the patented features of complainant
> " *used in connection with the rifles*." * *
>
> "The view here taken is that the value in the
> " infringing machine of the rifles is fixed by the
> " Craig-Hoskin contract."

The Master then holds that "the value of the

" Fisher invention in the infringing Little Giant " machine is the net profit made by respondents " Hoskin since the date of Fisher's re-issued " patent, less the amount paid by them to the " Craigs under the contract." The Master further says in regard to this amount paid to the Craigs:

" It was an *expense incidental to the business* of " respondents Hoskin, and *as such* should be de- " ducted from their profits in this accounting."

From this, and his final footing up, it is seen that the Master *does not allow to the Hoskins one single dollar's advantage for the patent which* SECURED THEM THE ENTIRE MONOPOLY *of the business*. The actual cash they paid out he allows them *as expenses*, but he allows nothing to them for *the advantages* THEY *obtained by incurring that expense*. It is in evidence that the Craigs bought the patent of Macy & Martin for two hundred and fifty dollars. In fixing the actual value of the patent, the Master had just as good a right to take the price that the Craigs paid for it, as he did to take the price which Hoskin paid for it. It was not the province of the Master to find the money value of the rifles *in the machines*. If he was to find the value of the rifles at all, he was to find what was the value of those rifles in the machines *to the*

Hoskins. Those rifles may have been worth less to Hoskin than he paid for them, and they may *have been worth to him a great deal more than he paid for them.* The rifles may have been worth a great deal to the miner who purchased, and yet worth nothing to the Hoskins, who sold the machines, or the opposite may have been the case.

It would seem to be fatal to this feature of the report, that it does not in any manner undertake or purport to say what was the *value of those rifles to Hoskin* in the manufacture and sale of the Giants. It does not necessarily follow that it was to Hoskin's advantage to sell the best machines. By selling machines which would quickly wear out or be easily broken he would be able to sell more new machines, and able to do a greater business in repairing. The question submitted to the Master to ascertain was, *what was Hoskin's gains* in making and selling, not what the miners gained by getting good and valuable machines for use. It is a curious way to answer the question, as to how much a man *makes* by buying and selling a horse, to say he paid a hundred dollars for the horse, and that is all I know about it, therefore he did not make anything.

We will now proceed to point out at length, but in as few words as possible, the testimony in this case that was taken before the Master.

The first witness called by the complainant was the defendant Richard Hoskin.

He testified to being the proprietor of the Empire Foundry at Marysville, and to making and selling after September second, 1879, three hundred and thirty-one hydraulic machines of the sizes and at the cost as follows, viz:

Hoskins manufactured altogether 331 machines since the date of the complainants' re-issued patent, September 2nd, 1879. For those machines he received $47,224.41. Those machines were of different sizes, numbered respectively from one to eight. There were 129 number one, 91 number two, 34 number three, 36 number four, 18 number five, 13 number six, 8 number 7, and 2 number 8. The royalties which he paid upon the number one machines prior to the expiration of the Macy and Martin patent was $35 each. Of course, *the value of the Macy and Martin invention was just the same in those machines after the patent expired as it was before.* It was still *equally useful in the machine.* And as the parties had fixed the value of that invention at $35 in each one of those machines before the patent expired, that established, or at least tended to establish, its value in those machines for all time. The same is true as to the royalty paid for the same invention upon machines of other sizes; and the rule holds good, whether that royalty was paid for the Macy and Martin patent alone, or whether it was paid for all of the inventions of the Craigs which were in the machine. Taking the value, then, of the defendants' patented or other inventions in the Little Giant machine as fixed by the royalties between themselves, those values were upon 129 number one machines $4,515; upon 91 number two machines at $50 each, $4,550; upon the 34 number three machines at $75 each, $2,500; the other 77 machines at $100 each, $7,700—making an aggregate amount of $19,315—which was due to the value of the improvements covered by Craig's share of the patent right. But so far as the Fisher machine is concerned, the parties had also fixed ed the value of Hoskins' interest in the improvements in them at one-third as much as Craig's. $19,315 increased by one-third makes $25,753 and one-third dollars. The cost of the 331 machines is shown by Hoskin's evidence to have been $17,578.82. Add to that $17,578.82 the value of Craig's and Hoskins' improvements, as we have ascertained them, and the amount is $43,322.15. This substracted from $47,224.41 for the entire amount of the machines sold, there remains $3,902.26. An allowance should be made in this of $125 for bad debts and ten per cent. on the gross sales for incidental expenses, interest, etc., $4,722.44.

Royalties paid for other patents by an infringer are allowed to him in the accounting.

Le Baw vs. *Hawkins*, 2 B. & A., page 565.
Nicholson Pavement Co. vs. *Elizabeth*, 1 B. & A., pages 461–462.

The same rule prevails when the infringer owns the patent which covers an invention that has increased the selling price of the infringing machine.

Steam Stone Cutter Co. vs. *Windsor Manufacturing Co.*, 4 B. & A., beginning at the middle of page 450.

There was no dispute in this part of the testimony, and the Master found accordingly. The selling price of the machines was given as found by the Master.

At folio 123, Hoskin was recalled and explained the business relations between him and the defendants Craig in regard to the hydraulic machine business. He put in evidence the contract between them, already printed herein. His testimony showed that the Craigs had not made, used or sold Giants, and the Master has so found. His evidence as to advantages and profits and comparison of machines will be pointed out hereafter. It was against the complainants' side of the case.

Complainants' next witness was John Patterson. (Transcript, pages 69 to 76.)

He compares the Watson machine (this was a single-jointed machine called the "Champion") with two-jointed machines. He says it turned hard, but threw as good a stream as the two-jointed machines. He had seen many single-jointed machines apparently in good order lying around on the bed-rock in various claims. He only knew one to be in use in ten years. The Giants had taken their place through the country. In his cross-examination he says the "Victor" turned hard In this he probably meant Watson's machine. He says the Allenwood was a single-jointed machine; that the bend in Fisher's was the same as the bend in the Allenwood; that the *credit of good streams was given to the rifles. That when Fisher was enjoined from the use of rifles his machine was worthless.* That the stream was no straighter with two joints than it was with one. *That the Allenwood worked first rate.* No new single-jointed machines were on the market.

James B. Patterson was complainants' next witness. (Transcript, pages 76 to 83.)

He testified that the Giant was better and more valuable than single-jointed machines; that it worked easier, and threw a better stream. That he knew of no single-jointed machine going into use in ten years. That some Giants threw better streams than others. By single-jointed machines he meant the Dictators, the Allenwood and the Monitor or Globe machines. That the Dictators threw a good stream straight ahead, but not when it was turned. He had seen a single-jointed machine—a Dictator—in use within three years at Buckeye Hill. *He never saw a Fisher machine.* The Allenwood superseded the hose, then Craig's Globe or Monitor superseded the Allenwood, and then the double-jointed machines superseded the single-jointed ones. At folio 212 he makes its small amount of bend the one feature of the Giant which gives it its great superiority over other machines. This feature is not in Fisher's machine or invention.

E. P. Hubbard was complainants' next witness. (Transcript, pages 83 to 86.) He claims to be familiar with the Giant and all the single-jointed machines. He says the Giant is the best. That the only advantage the Giant has over a single-jointed machine is that you can lower it more and easier. That the Gooseneck superseded the hose, then Craig's Globe superseded the Gooseneck, then came the Dictator, and then the Giant. He had seen the Giant and a single-jointed machine work side by side in the Hussey claim. That was five or six years ago. He could see no difference in the streams they threw. He does not know whether the single-jointed machine is at work yet or not. He does not mention Fisher's machine once.

John P. K. Parkinson was next called by complainant. (Transcript, pages 86 to 89.) He had worked for Fisher ten years ago, making machines. He knew the construction of the Gooseneck, the Fisher and the Globe machines, but had never handled them. He thinks the vertical motion is the valuable feature of the Fisher and of the Giant. He never saw a single-jointed machine without the vertical motion, and never used any hydraulic machine except the hose. *Fisher's machine went out of use because he could not use the rifles.* (Folio 231.) *That the Giant is a superior machine to Fisher's, and took its place.* (Folio 232.) The Giant was superior because in it the water made less bend. The bend in Fisher's was the same as in the Allenwood.

Hoskin was recalled, at page 89, to prove how much royalty he paid the Craigs.

The plaintiff rested without calling any other witnesses except Fisher himself.

It will be noticed that not the slighest attempt is made by the testimony of either John Patterson, James B. Patterson, E. P. Hubbard or John

P. K. Parkinson to show that defendants made a single cent by the use of Fisher's invention. *Not a single question is asked or answered in all their testimony looking in that direction.* They compare single with double-jointed machines, but only to a limited extent. They say but very little about the Victor or Dictator, and nothing about the Clipper. These were the three single-jointed machines which were open to the defendants to use, *and which they claim they could and can make and sell at a greater profit than they did or can make or sell the Giants or any other two-jointed machine.*

While by this testimony the complainants make a limited and imperfect comparison between single and double-jointed machines, *there is no attempt made to show how much more one is worth than the other. No attempt was made to show any definite money value of any difference between them,* either to the miners or to the defendants. The value of the evidence is in showing *that there were good practical single-jointed machines in use belonging to and made and sold by the defendants, and with which they could have supplied the market.* That Fisher's machine went out of use and *was worthless when he was enjoined from using the rifles.* In fact, the foregoing remarks will fairly apply to all the complainant's testimony in the case, including Hoskin's and Fisher's depositions. None of it shows or attempts to show any specific money value between the single and the double-jointed machines, or that any specific money value resulted on account of that difference either to the miners or to the defendants.

Frank H. Fisher's deposition is in the Transcript, pages 90 to 118. It is wild and worthless. He has not been in the mines since 1872, or for about seven years before the date of his re-issued patent. He of course knows nothing and tells nothing about the defendants, gains or profits. He talks about fifty thousand dollars damages because he could not manufacture, and fifty thousand dollars damage to the future of his patent because defendants had put down the prices of *their* machine; also about his rights being interfered with by the suit against him on the rifle patent, and seems to think losses he suffered in 1872, or prior thereto, can come in as damages for infringing his re-issued patent, granted seven years afterwards. He gives the prices he got for, and the profits he made on his Chiefs when he sold them *with the rifles in them.* He gives considerable evidence as a mechanical expert, but *tells nothing that tends to show any gains or profits made by defendants in using his invention.* He shows his Chief to be heavier than the Giant, which of course only tends to show that it would have cost more to have made the Chief than it did to make the Giant.

The defendants put in the testimony of James Bradley (Transcript, pages 31 to 37); of W. R. Craig (Transcript, pages 37 to 46); of Joseph Craig (Transcript, pages 61 to 69); of Joseph McGillivray (Transcript, pages 118 to 124); of Richard Hoskin (Transcript, pages 124 to 128); of George M. Taylor (Transcript, pages 128 to 134); of Jason Brinck (Transcript, 134 to 140); of E. H. Willard (Transcript, pages 140 to 147); of Philip Nichols (Transcript, pages 148 to 154); of Thomas Manly (Transcript, pages 155 to 159); and of Joseph Hoskin (Transcript, pages 159 to 168). The testimony of these witnesses was put in for the purpose of showing, and it does show, that three of the single-jointed machines which were open to the defendants, viz., the Dictators, the Clippers and the Victors, were good practical working machines, and that the defendants *would have sold just as many of them as they did of the Giants, and at quite as large a profit to themselves*, if they had manufactured and put them upon the market instead of the Giants.

These three single-jointed machines were superior to the Globe machine, which also was a single-jointed machine, and was open to and belonged to the defendants. The joint of the

Globe machine was so constructed that the pressure of water in the machine tended to press the parts of the joint together and make it turn harder, *just as it did in the Fisher machine.* The Dictators, Clippers, Victors and Giants were so constructed that the pressure of the water tended to force the bearing parts of the joints apart, and on this account they worked much easier in turning. Fisher himself testifies that "it was an advancement in hydraulic mining" *when they so changed the single-jointed machines that the pressure of the water tended to force the parts apart instead of together.* (Transcript, folio 298.)

Even the inferior Globe machines held the market for the Craigs until the defendants made improvements upon it. Although it was the most inferior of the single-jointed machines, still several hundred of them went into actual successful use, and were sold at as large a profit as the other machines were. (Evidence of Joseph Craig, transcript, folio 165.) The evidence here referred to is to be taken in connection with Fisher's testimony as to what profits he made on his machines, and with the further evidence that the single-jointed machines cost the least.

The following is a synopsis of the defendant's testimony:

James Bradley's evidence, taken on the accounting, is in the record, pages 31 to 37.

He has been a miner ever since 1850. He says there is no advantage in two-jointed machines over the single-jointed machines. He was foreman in the Whisky Hill mine four years before he testified. There were used in that mine two Giants and two of Hoskin's single-jointed machines. They used the same sized nozzles in both kinds of machines. He used those single-jointed machines there for six months, and they had been in use there for many years before then. The one-jointed machines there were used as much as the two-jointed ones. The single-jointed machines were as good every way as the Giants, and were easier to move from one place to another because they were not so heavy. He always thought that the bolt down through the joint of the Giant interfered with the water running through it.

Walter R. Craig's evidence is in the record, pages 37 to 46. He has been a miner since 1857, and was familiar with all the machines used. He worked in the Jenny Lind Mine, a mile from Whisky Hill, and used there a Giant and also a single-jointed machine called the "Victor." They both worked well, but the Victor threw the best stream. That Victor was a large machine, larger than the Giant. It had an 11-inch inlet and a 9-inch outlet. He also knew other Victors of the same kind, single-jointed, to be used in other places. He saw one Victor that was used, to his knowledge, two years near Nevada City, and he thinks it is in use there yet. It was in the Gentry claim. The Victor he used at Jenny Lind was more than double the capacity of the Giant used with it. Sometimes there was not water enough in this ditch to supply it. It was heavier than the Giant used with it, but was lighter than a Giant would be of an equal capacity with it. It was an advantage in moving around to have a light machine. There was no perceptible difference in the amount of labor required to work them, between the one-jointed machines and the two-jointed machines. A single-jointed machine was just as good as a two-jointed machine.

Joseph McGillivray' stestimony is in the record, pages 118 to 124. He had been an owner or superintendent of mines since 1850, and was familiar with the different kinds of mining machines. He had used Fisher's Hydraulic Chiefs, and the Dictators, the Victors, and the Giants. He thought the Giant the best and the Victor next. *The Victor was better than Fisher's Chief.* Folios 314 and 322 and 326. They had a Victor and one of Fisher's Chiefs in one of their claims in Trinity

County. They threw aside Fisher's machine and used the Victor exclusively in that claim. He sold out in 1874, but went back to the claim in 1875, and the Victor was still in use there. That Victor was also a large machine. Folio 327.

George M. Taylor's evidence is in the record, pages 128 to 134. He has been a practical miner since 1852, and used machines for twelve years. He worked in the Indiana Hill claim for four or five years, from 1870, and used there a single-jointed machine called the Clipper. There were Giants there also, but they preferred the Clipper, and they used it the whole of the working season every year. The Clipper worked easier than the Giants, and threw a better stream, and was used the most for all purposes. Hoskin Brothers then owned the mine. He also saw Hoskin's Dictators used in claims around Gold Run.

Jason Brinck's evidence is in the record, pages 134 to 140. He had used the Dictator and also the Giant in the Hawkins claim. Both machines worked first rate, but he liked the Dictator the best. It was easier to move. The Dictator was kept in constant use there from 1871 up to two years ago. The witness was an owner in the claim. He saw a Dictator at work, the last Monday before he testified, in the Druid claim. The

Dictators were all single-jointed. He would as soon have a Dictator as a Giant, if of the same capacity. He also saw the Clipper at work in the Hoskin Indiana Hill claim, but did not pay much attention to it.

Edward H. Willard's evidence, is at pages 140 to 147. He had been a miner for twenty years, and had used Giants, Dictators and Clippers. The Dictators and Clippers were single-jointed machines. He worked in the Hoskin claim at Indiana Hill, where there was a Giant and a Clipper. That Clipper, he testifies, was the best machine he ever worked. He also used another Clipper at Chalk Bluff, in the Hayward claim, formerly owned by Burr & Duryea. It worked satisfactorily, and they used it until they needed a larger machine. He used it one season and part of another four or five years before he testified, which made the use occur in 1877 and 1878. He also used three Dictators two seasons in the Nevada mine. They were satisfactory, and as durable as any of the machines. He had used the Giant with the Dictators and with the Clipper. The Clipper worked the best of any. It worked easier and threw a better stream. There was no bolt in it to divide the stream. The Dictators also worked better than the Giants. They worked easier and threw a better stream. At Chalk

Bluffs they had the Clipper, the Dictator and Giants. The Clipper and one Giant were of the same sized inlet, each being 9 inches. When large enough, he preferred the Clipper or Dictator to the Giants. He had used both the Clipper and Giant under a pressure as high as 300 feet.

Philip Nichols' evidence is from pages 148 to 154. He has been a miner ever since he has been able to work, and has worked in hydraulic mines since 1866. He began working in the Hoskin Indiana Hill claim in 1873, and worked there for two seasons. He used the Clipper and the Giant there. The Clipper was the best working machine of the two. The Hoskins had two claims at Indiana Hill. One was called the "Hawkins" and the other was called the "Miami." He was Hoskin's foreman. and he used the Clipper in the Miami claim under 350 feet pressure. He worked the Clipper in the Miami claim until the claim was worked out in 1875 or 1876. *He worked the Clipper and let the Giant lie idle all the time for two seasons, because the Clipper worked so much easier.* Joseph Hoskin sold the Clipper afterwards to a man at Iowa Hill for fifty or seventy-five dollars, and Richard Hoskin was dissatisfied with the sale. The Giant there was a Number 3, and had a 11-inch inlet.

He also saw Dictators used from 1869 or 1870 up to or about 1878 in a number of claims around Gold Run. Where they had both the Dictator and Giant, and only wanted to use one machine, they used the Dictator, because it worked easier than the Giant. The largest Dictator had a 9-inch inlet, which was the same size as a Number 2 Giant. The Dictator always threw the best stream. He always said that the Clipper was the best machine he ever saw, and he told other men, some of whom he names, so. He never saw a Fisher machine.

Thomas Manly testified, pages 155 to 159. He had only worked the Giants. He has had to take Giants apart because things caught on the bolt in it. He was getting ready to go to Idaho, hydraulic mining. The week that he testified he went to New York Flat to see a Clipper which McChesney had told him of. The men at New York Flat were not working any machine the day he was there, but were taking the pipes apart, and moving the machine to a new place. He found the Clipper, there, however, fresh greased and nice, and showing every indication of recent use. It was not rusty, as a machine not in use would be. The men told him that Clipper had been in use nine years, and that it was better then than any Giant that was made in Marysville.

Defendant Joseph Hoskin's testimony is from pages 159 to 168. He has been interested in hydraulic mining from 1861 or 1862 up to the present time. He has used the Giant, Dictator and Clipper. He has seen the Allenwood work. He has never seen the Fisher machine work, but at his foundry in Marysville, *he melted up two of the Fisher machines as so much old iron. They were new machines, but rusty from non use.*

He and Richard Hoskin owned the Hawkins and Miami claims at Indiana Hill. They used a Clipper machine with a 9-inch inlet in both the claims. They also used a Number 3 Giant with an 11-inch inlet in the same claims.

A Number 2 Giant has a 9-inch inlet, and is of the same size as the Clipper used at Indiana Hill. Number 1 Giant has a 7-inch inlet. Most of the Giants made by defendants have been Numbers 1 and 2.

The Clipper works easier than the Giant of the same size. The goodness of the stream depends upon the rifles. The Giant has a bolt through it, while the Clipper has a clear water-way.

He has seen the Dictators in use since 1871 or 1872, and saw one in use in the Druid claim within the four days preceding the giving of his testimony. He prefers the Dictator to the Giant because it works easier, and has no centre-bolt. Trash is caught and stopped by the centre-bolts in the Giants. He believes the Dictators were in use around Gold Run all of every water season up to the time he left there in 1879.

In the Hawkins and Miami claims the Clipper worked better than the Giant, and they used it the most. They had two Giants there, but the men preferred to work the Clipper, and so the second Giant remained there unused.

He sold that Clipper for fifty-three dollars, and his brother "blew him up" because he sold it too cheap. He thinks the Dictators and Clippers are both better than the Giants. The Dictator was patented as a pipe-coupling.

Joseph Craig also testifies (pages 61 to 69) that he and his father, R. R. Craig, made and sold from *two hundred to two hundred and fifty "Globes" and "Victors,"* both of which were single-jointed machines. About two hundred of the number were Globes. Most of the fifteen machines mentioned in the Craig-Hoskin contract (Exhibit 1) were Victors. It was a Victor that Walter Craig used at Jenny Lind. The Victors worked as well as any machine can work. The Victors and Dictators were nearly alike, and the Dictator was a splendid working machine. He understood all about the machines, and had worked the Fisher. The Fisher was of *poor construction; was clumsy, worked hard, and had a small water way. The Giant was one-third lighter than the Fisher of equal capacity.*

The defendants *could have made and sold as many Dictators as Victors if they had gone on making them as they did of the Giants.* They made the same profits on the Dictators and Victors that they did on the Giants. He never had anything to do with the Clipper. It was a good machine. *There was no money value arising to defendants from making and selling the two-jointed machines instead of the single-jointed machines.*

The making and selling of the Victors, Clippers and Dictators were open to the defendants. No one else had any patents on them. They made and sold single-jointed machines up to about 1875. They bought the Allenwood patent, and paid three hundred and fifty dollars for it. They paid two hundred and fifty dollars for the Macy and Martin rifle patent, and spent forty-five thousand dollars litigating it. *They collected a royalty on every Fisher machine used.* They were selling the Globe machines at the same price that Fisher sold the Chiefs at, and the rule they adopted for collecting royalty was to collect as much from each Fisher machine as royalty as they would have made had they sold one of their own machines at their regular price. They collected more than that from the Fisher machine in some instances. They collected from one party twelve hundred and fifty dollars on four Fisher machines. Once they collected three hundred and twenty-five dollars on one Fisher machine. They paid Hoskin his share of the royalties collected from the Fisher machines, as per contract (Exhibit 1.)

Richard Hoskin also gave his testimony as to the comparative merits and value between the single and double-jointed machines. He says ever since September 2, 1879—the date of the complainants' re-issue—he has had the right to use all of the Craig patents and also his own. (Folios 129–130.)

That he made Dictators under his own patent from 1870 on for three or four years, and that they worked well. He knows some were used for seven years, and thinks some are in use yet. He also knew the Clipper, and described it. The Clippers were used at Chalk Bluff. He used a Clipper in his own claim at Gold Run five or six years. (Folios 131 to 133, also 134 to 136.)

The rifle patent gave him the monopoly. Miners could not get machines of any one else. (Folios 138–139.)

Neither the Fisher nor the Giant were good for anything without the rifles. Only the defendants in this case made machines after the injunctions in the earlier cases were granted. (Folios 139 to 141.)

The Dictators threw the best stream he ever saw. (Folios 132 and 143.)

There was no advantage or gain in making or selling the two-jointed machines instead of the one-jointed machines. (Folio 142.)

After the Craig-Hoskin contract (Exhibit 1) he made Clippers at intervals for six or seven years, but only when called for. (Folio 145.)

He had yet to meet a single person to whom he had sold a single-jointed machine who did not prefer it to the two-jointed machines. (Folio 154.)

The fifteen machines mentioned in Article IX of Exhibit 1 were all single-jointed machines. They were "Clippers," but they called them Dictators. They were both of the same principle. (Folio 156.)

He also shows that Fisher's Chief is inferior to the Giant. (Folio 157.)

The single-jointed machines were used under great pressure, as high as two hundred and fifty and three hundred feet head of water. (Folio 339.).

The pressure of water at the end of a nozzle six inches in diameter, under three hundred feet pressure, would be over three thousand and six hundred pounds. We can, to some extent, realize how almost inconceivably great must be the power of water under a head of three hundred feet, when we remember that in ordinary mills and factories which are run by water power, a head of twelve to fifteen feet of water furnishes all the power needed.

The evidence of the defendants, which I have referred to in the foregoing pages, showing the specific and continued successful and satisfactory uses of single-jointed machines, *is entirely uncontradicted. Not the slightest attempt was made to contradict a single statement contained in it.* Instead of contradicting it, the complainants called four witnesses in what they were pleased to call "rebuttal." The evidence of these witnesses did not, however, partake of the nature of rebuttal to any perceptible extent. On the contrary, it was simply a cumulation of one kind of evidence, put in by the complainants in their opening.

The first of these four witnesses was John McAllis. (Transcript, pages 169 to 174.)

McAllis testified that he had used the Fisher, Gooseneck, Watson and Giant machines Watson's was single-jointed. He liked the Giant the best of all. He did not like the single-jointed machine as well. It threw a good stream. His only objections to it were that it was harder to work, and he could not elevate it enough. It was Watson's largest size machine, and had a 6-inch nozzle. Fisher's and Watsons's machines were both used where he was (around Smartsville). The Gooseneck was used before either. Watson's was the only single-jointed machine he had ever used. He had heard of others. Fisher's machine worked easier. Watson's machine did very well. He liked it very well, but he liked the others better. He liked the Giant the best of all. Fisher's machine would get out of order quicker than the others would. It wore on the knuckle-joint, and leaked when moved. He paid Craigs a royalty on both the Watson and Fisher machines.

It will be noticed that this witness does not say a word as to the uses of either the Dictators or Victors or Clippers, about which the defendants' witnesses had testified. The defendants did not own the patent on the Watson machine. That was the only single-jointed machine which was not open to them to use. The Watson machine infringed two of the defendants' patents (the rifle patent and the Rice patent for using the rollers and inverted flange in the single-jointed machines), and they had enjoined the manufacture and sale of it.

While Mr. McAllis' testimony does not contradict any of the defendants' evidence, it does, to a certain extent, corroborate it. It corroborates the testimony of Richard Hoskin as to his statements that Fisher's machine would wear in the joint, and would leak at the joint when turned. It also corroborates the general fact that single-jointed machines were good practical working machines. It is a significant fact that McAllis thought enough of the Watson machine to pay the Craigs a royalty on it, and so secure the right to use it, notwithstanding that he had a Fisher machine, on which he also paid the royalty, and had, therefore, an undisputed right to use it perpetually. Although he had the Fisher machine, he evidently believed the Watson single-jointed machine was well worth paying a royalty on instead of throwing it away.

The next of the defendants' "rebutting" witnesses was Henry Burns (Transcript, pages 174 to 178). His evidence was much like that of Mr. McAllis. He had used the Fisher and Giant and Watson's machine. He preferred the two-jointed to the Watson. The single-jointed Watson machine that he used had a 13-inch inlet and 4 and 5-inch nozzles. It was heavier than the Number 4 Giant. Fisher's machine leaked in two years use. The evidence of this witness did not tend to contradict a single fact to which defendants' witnesses had testified.

The next of the defendant's "rebutting" witnesses was John Timmons (Transcript, pages 178 to 183. He was a Miner in Nevada County prior to 1872. The first hydraulic machine used was the hose. Then came the Gooseneck, then the Dictator. The Dictator was in use when he left. Afterwards the Giant came. He had used both the Dictator and the Giant. He used them both under the same pressure. The Dictator had the smallest inlet, and he could run a bigger head of water through the Giant. The Dictator was good for a small head of water. He used it about a year. If the Dictator had had as large an inlet as the Giant he don't know but that it would have been as good as the Giant.

On his cross-examination he shows that the only real difference between the Giant and the Dictator which he used was in their sizes; that both had to be balanced with weights, but that such balancing was no disadvantge to either. He never used but that one Dictator. He never used the Fisher machine. *The Dictator was an improvement over the Goose-Neck.* As the Dictator was a single-jointed machine and the Goose-Neck was a two-jointed machine, this witness shows that a single-jointed machine may be better than a two-jointed machine, and that the single-jointed machine which defendants made were in fact better than the Gooseneck, which was the original two-jointed machine, and one that went into general and extensive practical, actual use.

The Dictator he used in his own claim, which afterward became the Duryea claim. That Dictator began work in the fore part of 1872.

This testimony, instead of contradicting, corroborates the defendants' testimony as to the long use of the Dictator in the Duryea claim.

The next and last of the complainants' so-called rebutting witnesses was George H. Rogers. (Transcript, pages 183 to 190.) He was a water agent, and when around in the mines using water he used to try the machines. In that way he had used various machines. First the hose; then the Gooseneck, in 1864 or 1865; next the Dictator, about 1867 or 1868; next he used the Giant. The Giant superseded the Dictator. He had never owned either a Gooseneck, or a Giant, or a Dictator, nor any interest in any mine where they were used. He had never been in any business in which it was his duty to use a hydraulic machine. He did not even know what a "Deflector" was. He is a stock dealer. He could not swear whether the Dictator was a one or a two-jointed machine, and admits that he knew very little about it. He says all the prejudice he heard against it was that it was hard to turn, but he found no trouble with it. It was the best machine he had seen up to that time.

Neither the knowledge of this witness, nor the facts which he testifies to, nor his manner of testifying, as shown in his testimony, entitles his testimony to any weight whatever. He does not contradict any of the defendants' testimony nor testify to any material facts, and knows but very little about the facts in regard to which he attempts to testify.

None of the rebutting witnesses of complainants contradict the defendants' testimony, but on the contrary they sustain the propositions set up by the defendants to the effect that the Dictators and Clippers and Victors were good, practical and successful hydraulic mining machines.

Not one of these witnesses undertakes to say or to show in any way that any advantage was gained by the defendants or lost by the complainants on account of the defendants making and selling the two-jointed machines instead of the single-jointed ones.

Under this state of the testimony, we insist that the exceptions to the Master's report should have been allowed, and the Master's findings set aside, and that a final decree for nominal damages only should be entered against the defendants.

The rule was established as early as the case of *Corporation of New York* vs. *Ransom*, 23 Howard, on page 490: "Actual damages should be
" actually proved, and cannot be assumed as a
" legal inference from facts which afford no data
" by which they can be *calculated*."

This rule has been re-affirmed so often that it is as well established as any one rule of law ever can be.

One point we especially make against the Master's report is, that after deciding that the value of the rifles was fixed by the Craig-Hoskin contract (Exhibit 1), he fails to allow the value as thus fixed except for a portion of the machines made and sold by the defendants. Had the Master allowed the value, as *thus fix d by himself, on each machine*, nothing would have been left for complainants on the accounting.

The evidence upon the accounting has shown another fact as to the relative sizes of the single and double-jointed machines, which it may be well enough to mention.

The single-jointed Clipper machine used so long in the Hawkins and Miami claims had a nine-inch inlet, and was of the same size as the Number 2 Giant. The Number 1 Giant was still smaller, having but a seven-inch inlet. The Number 3 Giant had an eleven-inch inlet. (Transcript, folio 439 to 442.)

Of the three hundred and thirty-one machines sold by the defendants, one hundred and twenty-nine were Number 1 Giants, and ninety-one were Number 2 Giants, making two hundred and twenty out of the three hundred and thirty-one machines sold by defendants of *either the same or a lesser size than was that single-jointed Clipper.* (Transcript, folios 69 and 70.)

The single-jointed *Victors were still larger.* The one used at Jenny Lind had an eleven-inch inlet, which made it of the same size as the thirty-four Number 3 Giants sold by defendants (Transcript, folios 105 and 106). It turns out, therefore, that of the three hundred and thirty-one machines sold by the defendants only seventy-seven were of larger size than the single-jointed machines which preceded them.

The theory, therefore, which we understand complainants to advance, to the effect that single-jointed machines could not have been sold because they had never been made large enough to comply with the miners' demand as to size, is demolished by the testimony, at least so far as the demand for two hundred and fifty-four of the machines went.

The appellants therefore ask for and expect a reversal of the decree of the Circuit Court in this case, upon the several grounds discussed, viz:

First—Because the re-issued patent upon which the suit is based is invalid as to its two new claims; and because the defendants are adjudged to have infringed only such two new claims.

Second—Because the evidence shows that the defendants have not infringed any part of the patent.

Third—Because not a particle of evidence was introduced tending to prove the value of the invention.

Fourth—Because the evidence of the appellants proves that there was no value to the patented invention.

Fifth—Because no damages in any form were proved, nor were there any profits shown to have been received by the defendants on account of their use of the said invention, if in fact they did use it.

Respectfully submitted.

M. A. WHEATON,
Counsel for Appellants.

IN THE

SUPREME COURT OF THE UNITED STATES.

October Term, 1887.

No. 169.

RICHARD HOSKIN ET ALS., Appellants,

v.

FRANK H. FISHER ET AL., Appellees.

BRIEF ON BEHALF OF APPELLEES,

BY

JOHN H. MILLER,

AND

J. P. LANGHORNE.

BELL'S STEAM PRINT, LYNCHBURG VA

IN THE

Supreme Court of the United States.

October Term, 1887. No. 169.

RICHARD HOSKIN ET ALS., APPELLANTS,

v.

FRANK H. FISHER ET AL., APPELLEES.

STATEMENT OF THE CASE.

This is an action in Equity brought by appellees against appellants to restrain the infringement of Re-issued letters patent No. 8876, granted to appellee Fisher on September 2, 1879, for a "hydraulic machine." The suit was commenced on May 8, 1880, in the District of California. (Record, 1–14.)

An answer was filed on July 10, 1880, in which the appellants set up the following defenses, viz: (1) Non-infringement, (2) Anticipation of the second claim, and (3) That the re-issued patent in suit is void because of new matter not in the original. (Record 15–24.)

On the issues thus joined the parties went to trial, and on March 17, 1882, an Interlocutory decree was made by his Honor Judge Lorenzo Sawyer of the Ninth Circuit, sustaining the validity of the patent and decreeing an infringement (Record 31–36). Appellants petitioned for a re-hearing, and pressed it so vigorously that Judge Sawyer granted the same; not that he had changed his views, for he still adhered to them, but solely that the case might be heard by his Honor Mr. Justice Field, who was then on his way to California (Record 36). The case was again tried on the merits, this time before Mr. Justice Field and the Judge of the Ninth Circuit. Upon that trial, Mr. Justice Field fully concurred in the former decision of Judge Sawyer, and thereupon a second Interlocutory decree was entered of like tenor with the first. (Record 38–43.)

The case was then referred to the Master for an accounting, who found that the appellants had realized $16,465.33 profits from their infringement; and a decree for that amount, with costs, was thereupon entered (Record 541–4), to reverse which decree is the object of this appeal.

It will be observed, that no attack on the validity of the first and third claims of the patent is made (see answer). We do not, however, insist on an infringement of the first claim, it being a mere construction claim. Hence the only questions before this Court are: 1st, Infringement; 2d, Anticipation of second claim; 3d, Validity of re-issue; and 4th, Correctness of the accounting.

THE FISHER PATENT.

The original patent was dated Dec. 20, 1870, and is numbered 110222 (Record 551). It was re-issued on Dec. 17, 1872, as Re-issue No. 5193 (Record 551), and again re-issued on Sept. 2, 1879, as Re-issue No. 8876 (Record 551). The application for this second reissue was filed March 29, 1879, and is the patent in suit (Record 551). It is entitled "Improvement in Hydraulic Mining Apparatus," and is used for washing away banks of dirt in hydraulic mining.

The first point made by appellants is the

ALLEGED INVALIDITY OF THE RE-ISSUE.

It is insisted, under this head, that the entire patent is void, 1st, because of new matter therein contained not appearing in the original; and 2d, because the patentee was guilty of laches in applying for the re-issue. To these objections we shall reply in the order stated.

A.

The record in this case is in such condition that the Court cannot consider the question of the alleged invalidity of the Re-issue.

The patent on which this suit is based is Re-issue No. 8876, and is a re-issue of another re-issued patent, viz: of Re-issue No. 5193. In order, therefore, to determine whether the patent in suit is a valid re-issue, it must be compared with the patent of which it is a re-issue, that is to say, with Re-issue No. 5193. *But this last named patent is not in evidence at all.* It was not introduced in evidence on the trial in the Court below, and no trace of it appears in the record. Hence it is impossible for this Court to compare the two instruments; and, therefore, it must be presumed that they are both for the same invention.

B.

But, say the appellants, Re-issue No. 8876 is for a different invention from that shown in the original patent, No. 110222, and for that reason is void.

To this there are two answers, either of which is sufficient:

1. *Re-issue No.* 8876 *cannot be compared with patent No.* 110222, *for the purpose of testing its validity.*

It must be compared with the patent of which it is a re-issue, to-wit: with Re-issue No. 5193. The question is not whether the invention claimed in Re-issue No. 8876 is the same as the invention shown in patent No. 110222; but is, whether it is the same invention as that shown, indicated, or described in Re-issue No. 5193.

2. *If the patent in suit can be compared with original patent No.* 110222, *that patent is not in evidence here.*

There is not a syllable of evidence in the record to show that it was ever offered in evidence on the trial in the Court below. True there appears in the record on page 559 et seq, a document entitled "Exhibit No. 5," which purports to be a copy of this patent; but how it got there we are at a loss to conceive. There is nothing in the record to show that it was ever offered or admitted in evidence on the trial. With regard to all the other exhibits in the record, there is evidence showing that they were offered and admitted in evidence. Thus at page 568 we read, "Complainant puts in evidence certified copy of Re-issued Letters No. 8876, * * * marked Complainant's Exhibit A A," and at pages 551 et seq we find the document itself set out in full and marked, "Complainant's Exhibit A A." So of all the other exhibits, except this so-called "Exhibit No. 5." Here is no such statement in reference to it, and it does not even appear whose exhibit it is. It certainly is not entitled to be in the record, if it was not offered in evidence, and it must appear that it was actually offered in evidence before this Court can consider it at all. This Court cannot presume that it was offered in evidence, simply because it appears in the record, there being no proof in the record to show that it was actually offered in evidence, and no mark on it showing whose exhibit it is.

C.

But if the preceding point be not well taken, the Record is still incomplete, because a large portion of the evidence is not before this Court, not having been brought up by the Appellants.

A large number of models were offered in evidence on the trial by both parties, and a very minute examination had as to their principles of construction and modes of operation. Such evidence was material in determining the identity of the inventions shown in the original and re-issue. They were used for that purpose. They were considered by the lower Court in passing on the question, and we claim that this record is absolutely unintelligible without those models.

Let us take a few samples from the record by way of illustration.

At page 574 of the record, we read :

> **"There are now produced models introduced in evidence in the case of *Fisher* v. *Craig*, No. 1144, in this Court, marked as follows: Exhibit D, Exhibit E, (connected with Exhibit D,) Exhibit J, Exhibit L, Exhibit M, and a model, the mark upon which has been destroyed, which is admitted to be a model of the Jenkin-Richards Hydraulic Machine."**

A long examination then follows of many witnesses, concerning said various models and their different modes of operation. Indeed, nearly the entire testimony is taken up with a minute examination and comparison of those models and their modes of operation. And yet, not one of those models is before this Court. They have not been brought up, and in their absence, how is it possible for this Court to arrive at any intelligent conclusion concerning them?

Again, at page 570, we read:

> **"It is stipulated and agreed by and between Counsel for the respective parties herein, that the evidence taken and on file in the case of *Fisher* v. *Craig*, No. 1144, shall be considered in evidence in this case, reserving, however, to each party the right to introduce such additional evidence as they may desire."**

None of this evidence appears in the record. It has not been brought up from the lower Court. In its absence, it cannot be ascertained whether the decree is erroneous or not. Certainly, if the evidence on which a decree is based in a *nisi prius* Court is not before the Appellate Court, the latter Court cannot pass on the correctness of the decree. It must be remembered that the omitted evidence was essential to a determination of the question of the invalidity of the re-issued patent. It was said by the Court in *Garneau* v. *Dozier*, (102, U. S. 234):

> **"To determine accurately the extent of the invention secured by a re-issued patent, the state of the art at the time the original patent was granted must be considered."**

And so likewise in *Eachus* v. *Broomall*, (115 U. S. 434.)

D.

Admitting, solely for argument's sake, that Re-issue 8876 can be compared with original No. 110,222, and that the latter instrument is properly in evidence here, and that the evidence which is omitted from the Record is not material, (all of which propositions we deny), still it does not appear that the invention claimed in the Re-issue is not the same as that shown, indicated, or described in the original.

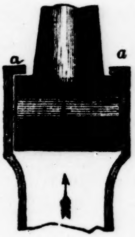
It is contended by Appellants that certain "new matter" is found in the re-issue which is not found in the original, and for that reason the re-issue is void. This defense is set up in the answer in the following language:

> "And further answering, these defendants say, and the same is true, that the re-issued letters patent herein sued upon contains new matter not contained in the original patent, and which new matter describes and claims that of which the complainant was not the inventor. That the said new matter describes a ball-and-socket joint formed by the discharge pipe E on the elbow B, and in the said last re-issued patent a ball-and-socket joint is claimed in combination with other things; but the defendants aver that the machines made by the said Fisher contained all of his inventions, but did not contain any ball-and-socket joint; neither did it contain any discharge pipe having any ball-shaped enlargement at its base, neither did it contain any ball-and-socket jointed sections Defendants say, that the said Fisher did not discover or invent or make any Hydraulic Machine, which machine or combination included either a ball-and-socket joint or ball-and-socket jointed sections, or a discharge pipe having a ball-shaped enlargement at its base, and his original patent did not contain any description of said devices or either of them, and did not claim the said devices either in any combination or otherwise. Defendants aver that all that is said in the last said re-issued letters patent about a ball-and-socket jointed section and ball-and-socket joints, and a discharge pipe with a ball-shaped enlargement at its base, is all new matter, which was not contained in the said original patent granted to said Fisher on the twentieth day of December, A. D. 1870, and was inserted in said last re-issued patent by the said Fisher fraudulently and for the sake of deceiving and misleading the public, he well knowing that the same was not his invention or any part thereof, and also knowing that it was not contained in said original patent."

Does the foregoing matter appear in the original patent? Is it *shown, indicated,* or *described* therein, either by the drawings or specification, or is it *new matter* appearing for the first time in the re-issue? This point must be determined, if at all, from an inspection and comparison of the two instruments, and will necessitate a description of

FISHER'S MACHINE,

as gathered from the re-issued patent. It will then be an easy matter to compare that machine with the original patent. This invention consists of such an arrangement of a hydraulic pipe and nozzle, that the nozzle can have both horizontal and vertical play, through the medium of two moving water-tight joints, for the purpose of facing the stream to any desired point of compass without shutting off the water or stopping the work of the machine. It consists of two curved pipe-sections, connected by a water-tight joint, in combination with a nozzle or discharge pipe connected with the upper curved section by another joint. The lower joint, that is, the joint connecting the two curved sections, is a "swivel," formed by two horizontal flanges on the outer meeting edges of the sections, which flanges are placed together, face to face, and held by an annular ring, carrying friction rollers, which fit and bear against the under side of the lower flange. Packing is interposed between the flanges. In this way is formed a "swivel" joint moving horizontally the entire sweep of a circle, and by means thereof the upper curved section carrying the nozzle, can be moved horizontally in a circle. To the outer end of the upper curved section is screwed a plate, which has semi-circular projecting ears and flanges forming a cup-shaped socket or cavity of cylindrical form. The discharge pipe, or nozzle, has a semi-cylindrical or ball-shaped enlargement at its base, consisting of a half cylinder, the discharge pipe entering it on the convex side. This enlargement is fitted into the cup-shaped socket on the end of the upper curved section aboved referred to, and is held in place by the flanges on the cap, thus forming a ball-and-socket joint. This joint may be represented by the following cut.



This is a close moving metallic joint, known as a *surface* joint. The water entering the joint in the line of the arrow forces the cylinder against the flanges *a a* and the sides, which being ground perfectly smooth, operate as bearings and make a water-tight joint. Packing might be interposed between the ends of the cylinder and the sides of the socket, but that is not necessary. The joint thus formed by the enlargement at the base of the discharge pipe working in the socket on the end of the upper curved section, moves only in a vertical line, up and down. The ends of the cylinder, pressing against the sides of the socket, form pivots or bearings, which prevent any lateral motion. A lever arrangement is attached to the discharge pipe extending backward, so that the operator can easily handle it, but that matter is not in dispute. By operating the lever the machine can be caused to move in a horizontal plane, by means of the swivel, or lower joint, and in a vertical plane, by means of the upper, or ball-and-socket joint.

The object of this construction is to get two motions for the nozzle, viz: the horizontal and vertical, and this is accomplished by the two joints. The lower one gives the horizontal and the upper one the vertical motion. Both are absolutely necessary in hydraulic mining. Where immense mountains of dirt are to be washed away, by means of a stream of water conducted through canals, sometimes a hundred miles long, from an elevation of a thousand feet, the stream as it issues from the nozzle acquires an immense power, and is necessarily difficult to handle. This is accomplished by Fisher's invention. Being made of heavy iron, it remains rigid in one position when set. When it is desired to change the direction of the stream, the lower joint gives a horisontal, and the upper one a vertical motion. An ordinary fire hose, however large and strong, would have to be chained down by a block and tackle; and whenever moved in a new direction, would become unmanageable, whirling around with tremendous force and endangering life and limb. This was called "bucking" by the miners. As illustrative of the hydraulic process, we have annexed to this brief, and marked "Appendix," an extract from a report on Hydraulic Mining, written by Mr. Charles Waldeyer, Superintendent of the Spring Valley Hydraulic Mining Co., of Cherokee, Cal.

From the foregoing, the nature of Fisher's invention will be easily comprehended. Turning now to the original patent, we will find that identical invention shown in the drawings and described in the specification. *The drawings of the two patents are identical.* There is no difference between them whatever; and it cannot be denied that whatever is shown in the drawings of the re-issue, is shown also in the drawings of the original. That a patent may be re-issued for the purpose of covering something shown in the drawings, though not claimed or described in the specification, is elementary law.

The specifications also are substantially the same. Says the original:

> "To the outer end of the elbow B is screwed a plate D, which has semi-circular projecting ears and flanges on the same to receive the semi-cylindrical end or ball joint of the discharge pipe E. * * * The ball-and-socket joint formed by the discharge pipe E on the elbow B permits the same to be swung up or down at will." (Rec. 565.)

Says the re-issue:

> "To the outer end of the elbow B is screwed a plate D, which has semi-circular projecting ears or flanges on the same to receive the corresponding shaped end or ball joint of the discharge pipe E. * * * The ball-and-socket joint formed by the discharge pipe E on the elbow B permits the same to be swung up or down at will, while it can be swung horizontally with the elbow B." (Record 553–4.)

Hence, we see that the alleged "new matter" in the re-issue is all plainly shown, indicated and described in the original. There is no question that the upper joint of the re-issue is identical with the upper joint down. The ends of the cylinder, pressing against the sides of the socket, form pivots or bearings, which prevent any lateral motion. A lever arrangement is attached to the discharge pipe extending backward, so that the operator can easily handle it, but that matter is not in dispute. By operating the lever the machine can be caused to move in a horizontal plane, by means of the swivel, or lower joint, and in a vertical plane, by means of the upper, or ball-and-socket joint.

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Hence, we see that the alleged "new matter" in the re-issue is all plainly shown, indicated and described in the original. There is no question that the upper joint of the re-issue is identical with the upper joint of the original, and the original patent calls it a *ball-and-socket joint.* Calling it by the same term in the re-issue is no departure from the original.

Counsel's precise objection appears to be that Fisher calls his joint a *ball-and-socket joint,* whereas it is a *semi-cylindrical* joint; and he gives us a scientific definition of a ball-and-socket joint to show that Fisher's is not one.

There is no magic in a name; and it matters little (for this part of the argument) what Fisher calls his joint. The question now is, whether the joint itself in mechanical construction (whatever its name may be) is the same joint shown in the original patent. That is the only thing involved in the defense of "new matter." Whether or not the joint can be called by the name *ball-and-socket* is another question, involved in the legal construction of the patent, and will be noticed hereafter; but it cannot arise in considering the identity of the two patents. The joint is called the *ball-and-socket* in the original, and that is sufficient authority for so calling it in the re-issue.

We claim that the defense of "new matter" is without foundation. The only matter contained in the re-issue, not in the original, is the following:

> **"It will be noticed that both of the joints employed in this machine are close moving metallic joints—that is, the meeting parts of the joints are made of metal, and more particularly the outer joint, which gives the vertical movement to the discharge pipe and nozzle, so that the movement of the discharge section is limited to the single action between the two parts by which it is joined to the swiveled section; or, in other words, there is no movement except at the single point where the parts fit together.**
>
> **"I am aware that hydraulic machines of this class have heretofore been made with horizontal joints for allowing the upper section B to swivel in a horizontal plane; and I am also aware that a canvas or hose section has been introduced in the length of the discharge pipe in order to give flexibility for**

directing the forward end of the discharge pipe independent of the horizontal joint within a limited range both up and down or to either side; but these machines were dangerous, as the flexibiity of the hose or canvas section and its liability to get kinked would often cause it to be caught by the stream in a wrinkled condition, so that the force of the stream on the bent end would cause the discharge pipe to fly out of the hands of the attendant and sweep around in a circle with tremendous force, in many instances wounding, and in some instances killing the workmen and by-standers. This accident was so common to this class of machines that it became known to the miners as 'bucking.' The greatest care was necessary in handling the pipe, and even then the machine would often buck. It is, therefore, necessary to confine the moving joint of rigid material, constructed as above described.

"In using this machine, the horizontal joint only serves as a means for allowing the upper section B and discharge pipe to be faced around in the required direction, while the forward joint allows a vertical movement to be given to the discharge pipe, in order to throw the stream at the desired elevation."

It is apparent that this additional matter cannot be considered as "new matter" describing a different invention. It merely makes more clear the invention already described in the specification and shown in the drawing, and also recognizes the then existing state of the art. Instead of deceiving or misleading the public, it actually enlightens them, for it is the duty of a patentee to recognize in his patent the state of the art. There is no "spreading out" or reaching beyond the plain and easily understood mechanism shown in the original patent.

It was said by the Court in *Robertson vs. Secombe Mf. Co.*, (10 Blatch, 481):

> "It is within the scope of a Re-issue that it contain a fuller descrrption of the state of the art than the original, as well as of the nature of the improvements made by the patentee and the advantages attained by them."

At this point we desire particularly to call the Court's attention to another fact, which should have weight on this question. Since the date of the original patent there has been no advance—no further progress or discovery—in the construction of hydraulic machines. The art stands exactly where appellee's invention left it. That invention cannot be improved on. It is theoretically perfect. Hence it cannot be urged that he has re-issued for the purpose of spreading out his claim over subsequent inventions. If subsequent inventions had been made, and the re-issue affected them, it might be claimed that the re-issue is invalid. Such is the theory on which nearly all the recent cases were decided which declare re-issues void. Such is the policy of the law.

Said Mr. Justice Bradley in the case of *Miller* v. *Bridgport Brass Co.*, (104 U. S., 350) :

> "It will not do for the patentee to wait *until other inventors have produced new forms of improvement, and then, with the new light thus acquired under pretence of inadvertance amd mistake, apply for such on enlargement of his claim as to make it embrace these new forms.*"

In that case the re-issue was dated nearly *sixteen* years after the original, and during that period of time improvements had been made by others, which were not covered by the original claims, but were covered by the re-issue. These facts were well calculated to call forth the remark that to uphold the patent "would operate most unjustly against the public."

So too in *Campbell* v. *James* (102 U. S., 356), and all the other recent cases, where subsequent improvements had been made by others, which were sought to be included within the scope of the re-issue, the same rule obtains. Under such circumstances it would have been a manifest injustice to have sustained the re-issue.

No such questions are involved in the case at bar. There are no rights of the public to be protected. The only rights to be protected are those of patentee, and that can be accomplished only by upholding the re-issue.

ALLEGED LACHES IN APPLYING FOR THE RE-ISSUE.

We shall now consider the second objection urged, which is, that Fisher was guilty of laches in applying for the re-issue.

We contend in the first place that the objection cannot be raised here, because it was not set up in the answer, nor was it raised on either of the trials in the lower Court. While it is true that this defense may be made by demurrer, and may be decided from an inspection and comparison of the two patents, yet it would be manifestly unjust to allow a defendant to sleep on that defence in the lower Court and raise it for the first time in the Supreme Court. The rules of appellate practice forbid such a course.

If this Court considers the question, however, we have a perfect answer to the charge.

Fisher's laches, if any there be, cannot date from the original patent No. 110222, because it is not claimed that he was guilty of laches in re-issuing that patent. The charge is that he was guilty of laches in re-issuing Re-issue No. 5193. The first re-issue was taken out within two years after the date of the original; and all the authorities concede that in such case there are no laches. Such is plainly deducible from the language of Mr. Justice Bradley in the *Brass Company* case. Hence it must be conceded that Re-issue No. 5193 could not have been attacked on that ground, and that the patentee was not guilty of laches in applying for it. The question now before the Court is, Was the patentee guilty of laches in applying for Re-issue No. 8876.

According to the doctrine laid down in the *Brass Company's* case, re-issues may be had (1) for the purpose of correcting mistakes in the specification, where the description of the invention is not sufficiently full and clear, and (2) for the purpose of expanding the claims.

Re-issues for the first purpose are looked upon with favor, and very justly too, for their object is to enlighten the public on the nature of the invention, and give them an exact description of it. Such re-issues are not attended with any injurious results. They make no one liable as an infringer, who was not such prior to the re-issue. They do not affect subsequent improvements. They do not interfere with subsequently acquired rights. Hence they are not subject to the strict rule of laches, and in such cases lapse of time between an original and re-issue is of small consequence. *Mahn* v. *Harwood*, 112 U. S. 360–362.

It is only the second class of re-issues which are closely scrutinized by the Courts.

Yet, it is conceded by the *Brass Co.'s* case, that under proper circumstances such re-issues may be had. What are such proper circumstances? Said the learned Justice in that case:

"But in reference to re-issues made for the purpose of enlarging the scope of a patent, this rule of laches should be strictly applied; and no one should be relieved *who has slept upon his rights*, and has thus led the public to rely on the implied disclaimer involved in the terms of the original patent. And when this is a matter apparent on the face of the instrument, upon a mere comparison of the original patent with the re-issue, it is competent for the Courts to decide *whether the delay was unreasonable*, and whether the re-issue was therefore contrary to law and void."

And again, "Any unnecessary laches or delay, etc., etc., effects the right to re-issue the patent."

The whole subject was again considered in *Mahn* v. *Harwood*, (112 U. S. 360), with the same result, where Mr. Justice Bradley said any delay which the Court might deem "unnecessary and unreasonable," would be fatal to the validity of a re-issue. So likewise Mr. Justice Mathews, in *Wallensac* v. *Reiher*, (115 U. S. 96), expressed similar views; and the law on that subject is now beyond question.

We gather from the foregoing, that before a re-issue can be declared void on the ground of laches, there must be an *unreasonable and unnecessary* delay, showing that the patentee has slept on his rights and led the public to rely on the implied disclaimer in the original; and this must be plainly apparent on the face of the instrument, from a mere comparison of the re-issue with the original.

First, then, there must be an unreasonable and unnecessary delay. Mere lapse of time alone and unaided is not sufficient, as in the case of two years public use prior to the application for an original patent. True there is a dictum in the *Brass Co.'s* case to the effect that "a public disclaimer" in a patent should be construed as favorably to the public in case of a re-issue as the two years prior public use in case of an original; but it is plain that the language does not exactly cover the point in hand, and it is equally clear, from the *rationale* of the decision and subsequent remarks contained therein, that it does not decide that a delay of two years is *alone and unaided* an unreasonable delay. Two years might in certain cases be an unreasonable delay. In fact, twenty months has been held to be an unreasonable delay in one case (*New* v. *Warren*, 22 Off. G. 588). On the other hand, more than two years may not be an unreasonable delay.

Said Mr. Justice Bradley in *Mahn* v. *Harwood*, 112 U. S. 361:

> **"No precise limit of time can be fixed and laid down for all cases. The Courts will always exercise a proper liberality in favor of the patentee."**

And Mr. Justice Mathews, in *Wallensac* v. *Reiher*, 115 U. S. 96, said a delay of more than two years was fatal, *unless accounted for and shown to be reasonable.*

The question is one entirely dependent on the special circumstances of each case. The ordinary doctrine of negligence applies, and that is a relative term. The negligence of children cannot be measured by the same rules of law which measure that of adults. What is negligence in the one may not be negligence in the other. This rule must be applied to the case of re-issued patents when an unreasonable delay is charged. It is necessary in correctly determining the reasonableness or unreasonableness of the delay, to consider, weigh and pass on the facts and circumstances attending the delay. Take an illustration: Suppose that on the very day a patent is granted, the patentee is taken sick and is confined to his bed and remains at the point of death for more than two years so that he could attend to no business. Or again, suppose he is kidnapped and forcibly transported to a foreign country, where he is confined and does not escape until long after two years. The moment he is at liberty, it may be two, three four, or five years, or even longer, he applies for a re-issue of this patent. Could it be contended that he was guilty of an unreasonable and unnecessary delay? On the contrary, he exhibits the greatest diligence, because he applies for the re-issue at the very first moment he is physically able to do so. His delay is not unreasonable, not unnecessary.

These views are fully sustained by this Court in *Wallensac* v. *Reiher* (supra), where the ordinary equitable doctrine of laches in regard to relief on the ground of fraud, was held applicable to the reissuing of patents.

Let us apply these principles to the case at bar. It is admitted that Fisher was not guilty of any unreasonable or unnecessary delay in applying for his first re-issue, it being within two years after the date of the original patent.

Suit was brought by him on the first re-issue against these same defendants, the case being entitled *Fisher* v. *Craig*, No. 1144, U. S. Circuit Court, District of California.

The result of that suit was to show the invalidity of the first re-issue, as will be seen from the following testimony of Fisher (page 606), viz:

"Q. Were you the complainant in the case of *Fisher* v. *Craig*, No. 1144, tried in this Court some years ago? A. Yes, sir. Q. Was the patent sued on in that case the same patent as the one upon which the present suit is based, Exhibit A A? A. It was not; it was the patent of which A A is a re-issue. Q. Which one of these re-issues cited in the title of the patent,

Exhibit A A, was that suit commenced under? A. It was the Re-issue No. 5193, dated December 17, 1872. Q. Did the result of that suit convince you that your patent was inoperative as it then stood? A. It did. Q. What was the reason of your taking out the present re-issue? A. The reason was to remedy the defect in the other patent."

The facts bring the case directly within the doctrine laid down in *Pappenhusen* v. *Falke* (2 Fish, 213), where it was said:

> **" It not unfrequently happens that a judicial interpretation of the specification or claim of a patent, or both, discloses to the inventor and patentee for the first time the defects in the instrument, and shows him that he has unwittingly restricted his rights within narrower limits than his discovery, or so inartificially described his invention, that he has failed to secure any substantial advantage by it. Such a disclosure furnishes a proper occasion for a surrender and reissue, when the error was inadvertent, and is clearly within the beneficent design of the statute."**

Similar views are to be found in

Doughty v. *West* (6 Blatch, 429).
Bliss v. *Gaylord* (6 Blatch, 279).

Hence we say that Fisher was guilty of no unreasonable or unnecessary delay in taking out his first re-issue; that after he had taken it out he commenced suit on it against these same defendants, and is was not until after the termination of that litigation that the defect in the patent was made manifiest. It required a "judicial interpretation" to ascertain the defect. Under such circumstances Fisher certainly cannot be charged with any unreasonable or unnecessary delay *prior to the termination of that suit,* and the time from which he will be chargeable is the time of its termination. Since a "judicial interpretation" was required to ascertain the defect, Fisher was justified in waiting for the same before re-issuing, and there was no *unreasonable or unnecessary delay* in so doing.

Now there is not a particle of evidence in the record to show *when the decree was rendered in the case of Fisher* v. *Craig.* It was stipulated on the trial below that all the evidence in that case might be considered in evidence in this case; but none of said evidence or of the papers, records, or proceedings, appear in the Transcript of the Record. They have not been brought here by appellants. Such being the case, it is impossible for this Court to determine whether there was any unnecessary delay in applying for the second re-issue. We know the date of the application, but we do not know the date of the decree in *Fisher* v. *Craig.* It might have been a month, a year, or two years prior to the application, or even longer. There might have been an unreasonable and unnecessary delay, or there might not; and such question can only be determined when we know what the delay actually was. We know one date, but not the other. It requires two points to fix a right line. One alone is not sufficient.

Under this state of the proof the Court must presume that there was no unreasonable or unnecessary delay in applying for re-issue 8876. In the absence of proof to the contrary, all presumptions are in favor of the validity of a patent, whether original or re-issued.

In the next place the invalidity of the re-issue must be made to appear from a comparison of the re-issued patent with the original. It is purely a mattter of legal construction.

Said the Court in *Miller* v. *Brass Co.*:

" And when this is a matter apparent on the face of the instrument, upon

a mere comparison of the original patent with the re-issue, it is competent for the Courts to decide whether the delay was unreasonable, and whether the re-issue was therefore contrary to law and void."

Now as stated before, the patent of which this is a re-issue, to-wit: Re-issue No. 5193, was not in evidence on the trial of the case in the Court below. No trace of it appears in the record. Hence it is impossible for this Court to compare the two instruments. It must be remembered, that in order to decalare a re-issue void solely on the ground of laches, the Court must have the patent of which it is a re-issue, before it for the purpose of comparison, so as to ascertain the nature of the defect alleged to have existed, and by reason of which the re-issue was necessitated. Since Re-issue No. 5193 is not before the Court, *it cannot be ascertained what was the defect in it.*

It may have been an insufficient or ambiguous specification, or it may have been from a too narrow claim. In the first contingency the doctrine of laches would not apply. (*Mahn* v. *Harwood.*) It is only in the second contingency, viz: where there is an expansion of claims, that the strict doctrine of laches would apply. Since this Court does not know what was the cause or reason of the re-issue, the question of its invalidity cannot be considered.

It will not do to compare Re-issue 8876 with the original No. 110222, as we have already seen. It is not a re-issue of that patent. There is no question as to laches in applying for the re-issue (No. 5193) of the original. That re-issue was within two years, and as a matter of fact there was no laches. The question is as to laches in surrendering Re-issue

5193, and securing Re-issue 8876. Besides, as we have before shown, the original patent is not properly in evidence here, and cannot be considered on this appeal.

II.

QUESTION OF INFRINGEMENT.

The lower Court found that the appellants had infringed upon the *second* and *third* claims of the patent. Was the decree correct in that particular? At the very threshold of this enquiry, we are met with a most serious objection.

All the evidence which was before the lower Court is not before this Court.

As already stated, the case was tried principally on the evidence taken in the prior case of *Fisher* v. *Craig*, consisting of oral testimony and a large number of models. (Record 570 and 574.) The additional evidence which was taken consists almost entirely of the testimony of experts concerning those models. But none of the evidence in *Fisher* v. *Craig* appears in the record. It is wholly omitted. Nor have any of said models been brought here. They are not before this Court. Among them was a model of appellants' machine (Exhibit L), and one of appellees' (Exhibit B B). Record 601, 569. In other words, appellants have brought up only a portion of the record on which the case was tried. How can this Court say that the decree is not supported by the evidence, when it is not apparent what the evidence was? How can it understand the construction and principles of those models, or appreciate the minute oral descriptions thereof given by experts, or test their accuracy, when the models are not here? It would be a poor compliment to the learned Justice of this Court and the Judge of the Circuit Court, who tried the case on two separate occasions, to hold that their decree is not supported by the evidence, when it is not known what that evidence was, or at least a large portion of it?

We claim that, under these circumstances, the question of infringement cannot be considered on the merits; and we accordingly invoke the familiar doctrine governing appellate tribunals, that a decree appealed from must be presumed correct in the absence of a contrary showing. Error must affirmatively appear, and must preclude every other possible theory.

But, say the appellants, there is a stipulation in the record from which the construction of our machine can be seen, and it shows there is no infringement.

That stipulation is at page 571, and reads as follows:

> **" Respondents admitted that they have made and sold Little Giant Hydraulic Machines since the date of the patent, Exhibit A A', and before the commencement of this suit, and that the said machines consisted of two curved sections and a discharge pipe; that the upper end of the lower curved section and the lower end of the upper curved section were connected by a horizontal or swivel joint, and that the upper end of the upper curved section was connected to the rear end of the discharge pipe by a joint consisting of an enlargement fitting into a corresponding opening or recess, and connected thereto by pivots on which the joint swings, and so arranged as to give vertical movement to the discharge pipe; that the enlargement was upon the upper end of the upper curved section, while the corresponding opening or recess into which it fitted was on the rear end of the discharge pipe, and that both of these joints were used in each machine manufactured and sold by them.**

> Respondents will produce and put in evidence a correct model of the Little Giant Machines made and sold by respondents, illustrating the description set forth in the above admission, said model to be used in connection with the description in said admission contained, said admission to be inoperative until the said model is introduced."

And at page 601 we find the following:

> "It is admitted that the model, Exhibit L, introduced in evidence *in the* case of *Fisher* v. *Craig*, number 1144, is a substantially correct model of the machines made and sold by the respondents since the date of the re-issued letters patent, Exhibit A A.
>
> "It is agreed that the said model, Exhibit L, shall be taken as answering the requirements of the stipulation heretofore entered into."

In answer to this we say:

1st. *It is a mere admission made by Appellants' counsel voluntarily.* We are not bound to accept it as the only evidence of infringement. As a matter of fact, it was not the only evidence of infringement. This Court cannot say that the decree of infringement was based solely on that admission. The burden is on Appellants to show *there was no evidence whatever* proving infringement, and this is not shown by merely pointing to their own admission and saying that it does not show an infringement.

2d. *The admission is inoperative here because of the absence of the model, Exhibit L.* That model was made a part of the admission by express words. The admission was "inoperative until the said model is introduced." The model was introduced, and from an inspection thereof and comparison with the patent, aided by testimony of experts and a knowledge of the state of the art, the lower Court made a certain decree. That model is not before this Court, nor is a large portion of the oral testimony. If it was a necessary part of the admission in the lower Court, it is equally necessary here. It may have varied from the admission. It may have shown the identical construction of Appellees patent. It is not known, as matter of fact, what it did show. In such state of the proof, it must be presumed that there was sufficient evidence of infringement before the lower Court, and that the decree is correct.

THE MERITS.

But if the preceding points be not well taken, and the Court is of opinion that the admission can be properly considered, as well also the testimony concerning the model, Exhibit L (which is not before the Court), we contend that an infringement is apparent therefrom.

A description of the patented machine has already been given, and it will not be necessary to say anything further on that subject. It will be necessary, however, to consider for a moment the construction of appellee's patent and ascertain its scope. There are three claims. The first will be omitted, as it was not infringed. Both the others were infringed. The first of them reads as follows:

> "2. A ball-and-socket joint for connecting the discharge pipe of a hydraulic mining apparatus with the end of a swivel section B, substantially as described."

It is contended by appellants that a ball-and-socket joint in mechanics is a joint formed by a spherical ball working in a hollow cup or socket, which allows it free motion in every direction. It is further urged, that by using the term ball-and-socket, this claim calls broadly for such a joint, that is, one having *free motion in all directions*, and as the joint shown in the patent has only one motion, up and down, the claim is void. The contention is, that an ordinary ball-and-socket joint, as technically defined in mechanics, was old at the time of Fisher's invention. But the claim must not receive this broad construction, because such construction would render it void. Where the language of a claim is equally susceptible of two constructions, one a broad one and the other a narrow one, and the broad construction would render it void, while the narrow one would be valid, it must receive the narrow construction. It is a favorite rule of patent law to give a claim such construction as will uphold it, not such as will invalidate it. Hence it frequently happens that a narrow construction will be given for the purpose of upholding the claim. The maxim *ut res magis valeat quam pereat* (*Turrill* v. *R. R. Co.*, 1 Wall. 491), is applicable. We must, therefore, discard the broad construction of *any ball-and-socket joint*, that is, one moving in *all directions*, and see if we cannot evolve some narrower construction, which will uphold the claim. This can be easily done. Popularly speaking, a ball-and-socket joint means simply a joint where an enlargement is found working in a socket. They may be made in various forms, but always comprise an enlargement working in a corresponding shaped socket. The enlargement may be of different forms. It is not necessarily limited to a spherical ball. It may be of cylindrical form, as shown in the patent, otherwise there would be no protection against *formal changes*. In speaking of Fisher's joint, expert Hanscom says:

> "Popularly, I should say it was a ball-and-socket joint. Mechanically, one is the same as the other, with the exception that one is cylindrical and

the other is spherical. It would not require any invention to devise one, where the other was in existence." (Record 754).

The claim says—a ball-and-socket joint *substantially as described*—referring to the drawing and description for the particular mechanism. By such reference, we find a ball-and-socket joint *of a particular description*, that is, not a scientifically perfect ball-and-socket joint, moving in all directions, but a joint consisting of a ball (enlargement) fitting into a corresponding shaped socket, and so arranged as to have only one motion, viz: a vertical up-and-down motion. Such a joint was new. It was never seen before Fisher's invention. It was useful. It supplied a long-felt want in hydraulic mining. Numerous inventors, including these defendants, had labored to supply this want, and all others had failed. Fisher alone succeeded. His genius accomplished it by taking a ball-and-socket joint and limiting it to one motion. This is the proper construction of the claim. Any other would be to fritter away a meritorious invention by sacrificing substance to form. Appellants' objection degenerates into one of mere *names*. It makes no difference what name Fisher gave his joint, so long as its nature was shown. He might have called it a "knuckle joint," "a rule joint," "a cup and flange joint," or even simply "a joint having such and such construction" (giving it). When he said "a ball-and-socket joint *substantially as described*," and described it in the drawing and specification, he did all that was necessary. It is not the *name*, but its *essence* and *substance* that is material.

The third claim reads as follows:

"3. The discharge pipe E having a semi-cylindrical or ball-shaped enlargement at its base, in combination with a corresponding cup-shaped socket, D, on the end of the horizontally swivelling section B, substantially as and for the purpose described."

The construction of this claim will be gathered from what has already been said. It is differently worded, but contains substantially the substance of the second claim, with other elements added, viz: the discharge pipe and swivelling section. The terms *semi-cylindrical* and *ball-shaped* are used as convertible terms, showing that form is not of the essence of the invention. A *globular* enlargement (as in appellants' machine) would be covered by it. This view was taken by the lower Court when it decreed an infringement of the claim. No anticipation of this claim, however, is alleged, and it will not be necessary to consider its construction further. We will add that, even if the Court holds the second claim void, the third claim is good, because its validity is not questioned. (See answer.) The only issue we have to meet on this claim is that of infringement.

It will now be in order for us to consider

THE INFRINGING MACHINE.

This machine is called the "Little Giant." According to the admission appearing at page 571 of the Record, it contains two curved sections, connected by a horizontal swivel joint, and a discharge pipe connected to the upper end of the upper curved section by means of a joint consisting of an enlargement on the end of the curved section fitting into a corresponding opening or recess at the base of the discharge pipe, and moving vertically on side pivots.

The lower joint is identically like the lower joint of Appellees'. It is a "swivel," and gives a horizontal motion throughout the entire sweep of a circle. So far the machines are identical.

The upper joint contains identically the same principle as Appellees' upper joint, with a slight modification of form. It has a ball-shaped enlargement at the end of the upper curved section. This enlargement is spherical in form, having a cross section cut from its outer end to allow the passage of water therethrough. The base of the discharge-pipe consists of a spherical socket for the ball of the curved section to fit into, and contains packing for the ball to rest and move against.

When the ball is placed in the socket, the socket fits over and covers the surface of the ball, thus enabling the ball to move freely in the socket in any direction, forming a universal ball-and-socket joint. This universality of motion, however, is the very thing to be avoided. Only an up-and-down motion is required. Accordingly, two small holes (one on each side) are drilled through the thickness of the socket and ball, terminating in the interior of the ball, and pins are inserted through these holes. These pins act as pivots on which the ball turns. Lateral movement is prevented, and the joint moves only in a vertical plane up and down.

In this way we have a machine giving the horizontal motion by means of the lower or swivel joint, and the vertical or up-and-down motion by means of the upper joint. The two machines contain identically the same principle. They both accomplish identically the same purpose, to-wit: a combined horizontal and vertical motion of the discharge pipe, by substantially the same means, to-wit: a horizontal swivel joint connecting the two curved sections and a vertically moving ball-and-socket joint connecting the nozzle with the upper curved section. The only variations from the patent found in Appellants' machine are certain formal or mechanical changes, which do not affect the integrity of the invention. Those variations are found in the upper joint, and are the following:

1. *In the patent, the male part of the upper joint is cylindrical*; *in Appellants' machine it is globular or spherical.*

2. *In the patent, the male part of the joint is at the base of the discharge pipe, and the female part at the end of the curved section*; *in Appellants' machine, these positions are simply reversed.*

3. *In the patent, the pivots on which the joint moves are larger than those in Appellants' machine.*

We contend that all of these are mere formal changes, mere mechanical differences, which may, perhaps, make a *better* machine, but *not a different* one. They do not mount to the dignity of invention, and therefore they constitute an infringement. Let us consider them more minutely.

THE CYLINDRICAL FORM.

As to the first one—our joint is a cylinder working in a corresponding shaped (i. e. cylindrical) socket. Appellants' joint is a sphere, working in a corresponding shaped (i. e. spherical) socket. Both joints accomplish the same purpose in substantially the same way. The difference is not one of principle, but one merely of form. It is merely the difference between two geometrical forms, both of which work on the same principle. Change of form is not a substantial change, unless form is of the essence of the invention.

Thus in *Winans* v. *Denmead*, (15 How. 330), the claim was for a "a coal car having a body *in the form of the frustum of a cone.*" That is to say, it was an inverted truncated cone. The object of this construction was to obtain a distribution of pressure equally in all directions. The Defendants had used a car body "octagonal in form." It was held to be an infringement; that is to say, an octagonal-shaped cavity was held to be the same thing as a conical-shaped one.

So, too, in *Murphy* v. *Eastman* (5 Fish. 306), we find similar views expressed. The invention was a brush-head designed to obviate the breaking and scratching of articles dusted. Around the head was a groove, into which was fitted a rubber ring in the shape of a rhombus, so that the ring, fitting into the groove, which had a sharp angle in it, presented a sharp angle outward. The claim was for a brush-head *provided with an angular groove around the lower side*, with a rubber ring fitting therein, etc. The defendant had used a brush-head containing a *circular groove*, with a rubber ring fitting therein. This was held to be an infringement by Judge Shepley—the difference between the two devices being merely a difference of geometrical form.

And so likewise in the English case of *In re Newall & Elliott* (4 C. B. N. S. 269), a cylinder with a spherical-shaped top was held to be an infringement of a cone.

The principles which decided the above cases must govern the case at bar. We have two geometrical forms, both accomplishing the same purpose in substantially the same way—one a cylinder, the other a sphere. Form is not of the essence of the invention, for the invention is operative in either form. Because our patent shows only one of these forms, we are not thereby limited to that particular form. We are not precluded from other forms. Says Judge Blatchford, in *LeRoy* v. *Tatham* (2 Blatch. 486):

> "A change of form is not a substantial change. A patentee is not confined to *the precise arrangement* shown in his patent. Formal changes are nothing; mere mechanical changes are nothing. All these may be made outside the description of the patent."

And Judge Shepley was equally felicitous in expression in the brush-head case, supra, when he said:

> "The patentee does not claim in terms the thing patented, *however its form and proportions may be varied;* but the law so interprets his claim without the addition of these words. In contemplation of law, after he has fully described his invention and shown its principles, and claimed it in a form which perfectly embodies it, unless he disclaims other forms, *he is deemed to claim every form in which his invention may be copied.*"

Apply these principles to the case at bar, and we readily see that the spherical enlargement of Hoskin is the same thing as the cylindrical enlargement of Fisher. They both accomplish the same result, to-wit: a vertical motion of the nozzle. They both accomplish it in substantially the same way, to-wit: by an enlargement fitting into a corresponding shaped socket to form a joint. True, one enlargement is spherical and the other cylindrical; but that is a mere *structural difference*. The spherical shape may, perhaps, make a better joint, but beyond that it accomplishes nothing not accomplished by the cylindrical shape. In other words, form is not of the essence of the invention.

Ferdinand Formhals, a distinguished civil engineer, who was the chief expert witness for Appellants on the trial in the Court below, fully upholds this theory. At page 620 of Record, he was asked:

> "Q. 44. Tell me what the round shape of the ball in Exhibit L (appellants' machine) accomplishes more than this cylindrical shaped joint in the Fisher machine. What more does it accomplish than this Fisher joint does by being cylindrical? A. *It accomplishes the same thing*, only there being corners and angular places, the Fisher joint would not be apt to be as tight as the other one. Q. 45. They both produce the same result, do they? A. They both produce the same result. Q. 46. In substantially the same way? A. In subscantially the same way."

J. M. Stockman, an expert witness called by the appellees, testified that in his opinion if the upper joint in Fisher's machine (cylinder working in cylindrical socket) was known and in use, it would not require any invention for a mechanic skilled in the art to construct the upper joint in appellants' machine (a sphere working in a spherical socket). (Record, p. 714, Ques. 9.) He thinks the two joints are the same thing and identical in principle. (See his whole testimony.)

W. W. Hanscom, another expert for appellees, after testifying to the different forms of the two joints, was asked:

> "In your opinion, would one of these joints be the mechanical equivalent of the other?"

To which he replied:

> "Yes, I should say it would, although they are not made just in the same form. What I consider a mechanical equivalent is one machine that will do

> the same work as another, taking it broadly, although it may not be constructed in just the same way; if it is doing the same work in substantially the same manner, it is a mechanical equivalent." (Record p. 747, ques. 8).

And again, the same witness, at page 750. ques. 19:

> "Then supposing that a hydraulic machine, constructed in all essential particulars like exhibit B B (Fisher's Machine), was in existence, would it, in your opinion, require invention to construct a machine similar to Exhibit L L (Appellants')? A. No, sir; I should not, with my present knowledge."

Indeed the testimony is overwhelming, that the spherical joint has no function different in principle from that of the cylindrical; that form is not of the essence of the invention; that the two joints are mechanical equivalents.

Let us now consider the second difference, to-wit:

REVERSAL OF PARTS.

In Fisher we find the male part of the joint (the enlargement or ball) at the base of the discharge pipe, and the female part (the socket) at the end of the pipe section. Hoskin has simply reversed these positions. He has placed the male part of the joint (the ball) on the end of the pipe section, and the female part (the socket) at the base of the discharge pipe. This is a favorite trick with infringers. They think by avoiding the technical wording of the claim, they avoid its substance. Our patent in terms calls for a ball-shaped enlargement *at the base of the discharge pipe* and a corresponding shaped socket *on the end of the pipe section.* Appellants hope to avoid the charge of infringement by naively saying, "We have no enlargement *on our discharge pipe.* We have no socket *on our pipe section.*" But it is well settled that reversal of parts, not accompanied by a change of function or mode of operation, does not amount to invention nor avoid the charge of infringement. This principle of patent law is so elementary, that it will not be necessary to do further than to refer generally to the text-books, and particularly to the case of *Atlantic Works* v. *Brady*, (107 U. S. 192.)

In addition we will say, it is only in the third claim that the parts are thus relatively located. The second claim calls broadly for "a ball-and-socket joint for connecting the discharge pipe of a hydraulic mining apparatus with the end of a swivel section," etc. It does not say that the ball is at the base of the discharge pipe, and the socket at the end of the pipe section. The arrangement may be that way, as in Fisher's machine, or it may be reversed, as in Hoskin's. Hence this particular defense cannot be made to the second claim at all, but only to the third.

Now, considering it with reference to the third claim, it will be seen at a glance that this reversal of parts gives no new function to the machine. In either case the machine operates in substantially the same way. The witnesses so testify. Fisher says:

> "The only difference is that the ball is on the end of the upper section of the joint in defendants' machine, while in mine it is on the end of the discharge pipe. The ball in their machine is the reverse of mine." (Record 606, Ques. 6.)

And again:

> "The only difference is that in the two machines the ball and socket are reversed. They operate in exactly the same way They produce exactly the same result." (Record 607, Ques. 8, 9 and 10.) "There is no mechanical or other difficulty whatever in reversing the parts in my joint and making them operate in a hydraulic machine. There is no difficulty in packing the joint thus reversed in order to make it operative." (Record 733, Ques. 8 and 9.)

Testimony of J. M. STOCKMAN:

> **"In my opinion, it would make no difference whether in Exhibits B B (Fisher's machine) the ball-shaped enlargement, shown on the rear end of the discharge pipe, was placed upon the upper end of the curved section, and the socket, which is now shown on the upper end of the curved section, placed on the rear end of the discharge pipe. There would be no mechanical difficulty encountered in making that reversal of parts. It could be done one way as well as the other. It wont make any difference. (Record p. 715, Ques. 10, 11, 12.)**

Ferdinand Formhals, an expert witness for appellants, testifies that the parts could be reversed in Fisher's machine—that is, the ball placed on the pipe section, and the socket on the discharge-pipe, as in Hoskin's machine—and it would be the same thing, would operate as before, would make no difference, and he winds up by saying the two joints are mechanical equivalents. (Record 622–25.)

The above evidence clearly shows that this reversal of parts is merely a formal change; that the machine would work equally well in either form; that no new function is imparted by such reversal of parts. It follows, therefore, that the patent covers both forms.

Further, a mere inspection of Fisher's patent shows that such reversal of parts could be made without changing the principle of the machine or affecting its efficiency. It is claimed by Appellants that this reversal of parts shown in their machine, is a substantial change, because the pressure of the water tends to force their joint asunder, while in Fisher's machine the water pressure tends to make the joint tight. This objection is more fanciful than real. In Appellants' machine the pivots hold the parts together, and while in that position, the pressure of the water forces the ball against the sides of the socket, and makes a water-tight joint. Remove the pivots, and then the water *would* force the parts asunder. The same is true of Appellants' joint. The ends of the cylinder form pivots or bearings, and they press against the flanges a a on the cap (shown in the cut *supra*). The pressure of the water thus makes the joint tight and the flanges keep the parts together. Remove the flanges, and the water would force the parts asunder in the same way as in Appellants' machine. The two are identical in this regard.

The above is fully borne out by the testimony.

Testimony of Fisher, p. 605, Ques. 192-3-4-5.

Testimony of Formhals, p. 616, Ques. 20, p. 623, Ques. 57-66.

Testimony of Stockman, p. 725, Ques. 5-6.

THE PIVOTS.

This is the third difference claimed to exist between the machines. The upper joint of appellants' machine turns on two small pivots—one on each side—formed by pins inserted through the sides of the socket and ball. It is contended that no such pivots are shown in Fisher's machine. A moment's reflection will show the fallacy of this argument. The cylinder in Fisher's machine works in a corresponding shaped socket, thereby forming a ball-and-socket joint, having one motion. The ends of the cylinder are flush up against the ends of the socket, and are in contact therewith. The cylinder is held in the socket, when the pressure is on, by the flanges in front. The pressure of the water forces the metal faces together and a water-tight joint is formed.

It is obvious that the ends of the cylinder, working against the ends of the socket, form bearings or journals for the joint to turn on, which are the equivalents of appellants' pivots. The only difference is in their size—those of Fisher being formed by the entire diameter of the cylinder, and those of appellants' by small pins. Fisher could just as well have made small pivots as large ones. He could have inserted a small pin in each end of the cylinder and used that for a pivot instead of the entire end of the cylinder, and that would have required no invention. Here again we find a slight variation in form, a mere structural difference. Appellants' expert, Formhals, testifies positively that he finds in Fisher's machine the equivalents of Hoskin's pivots (Test. 636, Ques. 22). Expert Stockman testifies to the same thing. He says:

> **" It would make no difference at all whether the pivot bearings in complainants' exhibit B B were made on the outer ends of the cylindrical-shaped enlargement, or whether they were made smaller so as to serve as simple pivots. In my opinion, it would not require any invention for a person skilled in the art to reduce that bearing in the manner I have stated. It would only be a mechanical substitute which any man might try. I don't think it would require any invention to do it. It would be a matter that would be well known to any skilled mechanic, and that he might try. (Record p. 715, Ques. 12-13.)**

Expert Hanscom likewise testifies to the same point. Says he:

> **" I consider the cylindrical section of the tube (on Exhibit B B) the equivalent of the pivots in the other joint. (Record 751, Ques. 25)**

From this it will be seen that the appellants have simply reduced the size of our pivots. There is no invention in diminution any more than in enlargement.

"But," say Appellants, " we use packing in our joint, while yours is a surface joint." We have shown that there are two ways of making a water tight joint. One is to grind the surfaces: the other to interpose a packing. The first course is pursued in Fisher's machine: the second in Hoskin's. Both systems are old, and have been known in mechanics for many years, and it is a matter of option with the mechanic which style he uses. (Formhal's Test., p. 635–6; Stockman, p. 728, ques. 5.) In either case the water pressure makes the joint tight. When no water is passing through Appellants' machine, the joint is loose and the discharge pipe hangs limp; but when water passes through it, the joint becomes tight and rigid (Formhals, p. 616). The same is true of Appellees' machine. So far as the question of packing is concerned, there is no material or substantial difference between the two joints.

The foregoing are the only particulars wherein any differences can be discerned between the rival machines, and those differences we have endeavored to show are not substantial or material, but are mere formal changes, mere structural differences, all within the scope of the patent. By an analysis of the machines we have shown an infringement, irrespective of the oral evidence, and we shall close this part of our brief by quoting from the testimony of Formhals, an expert witness, produced by Appellants themselves:

" Q. 31. Take Exhibit L (Hoskin Machine) in your hand and tell me how many motions that upper joint has? A. That has but one motion. Q. 32. What motion is that? A. It is an up-and-down. * * * Q. 33. Is it necessary that that joint should have any more motions than that one? A. No, sir. Q. 34. The only object of that joint, then, is to get the up-and-down motion, is it? A. It is to get the up-and-down, and also to keep a tight joint.

Q. 35. That joint has a ball-shaped enlargement, has it? A. Yes, sir. Q. 36. Fitting into a corresponding shaped socket? A. Yes, sir. Q. 37. It has trunnions upon each side of it, upon which the socket portion works over the ball? A. Yes, to keep them together. Q. 39. Take the model Exhibit B B (Fisher's Machine). Don't you find an enlargement on the end of the discharge pipe, on that machine? A. On the end of the discharge pipe there is an enlargement. Q. 40. That enlargement fits into the corresponding socket in the upper end of the section, does it not? A. Yes, sir. Q. 41. What motion has that joint? A. One—up-and-down. Q. 42. The same as the motion in the Little Giant Machine? A. Yes, sir. Q. 43. Has it got bearings on each side, the same as the pivot bearings on the Little Giant Machine? A. Bearings on each side. Q. 44. Tell me what the round shape of the ball in Exhibit L accomplishes more than this cylindrical-shaped joint in the Fisher machine? What more does it accomplish than this Fisher joint does by being cylindrical? A. It accomplishes the same thing, only there being corners and angular places, the Fisher joint wouldn't be apt to be as tight as the other one Q. 45. They both produce the same result, do they? A. *They both produce the same result.* **Q. 46. In substantially the same way? A.** *In substantially the same way.* **Q 47. Would you not call this upper joint in Exhibit L a mechanical equivalent of the upper joint in Exhibit B B, so far as the work they have got to do is concerned, that is, to give the up-and-down motion? A. Yes, sir; both joints are intended to do the same thing, * * * Q. 66. Then I will ask you, do you not consider the joint represented in Exhibit L (Hoskin) as a mechanical equivalent of the joint represented in Exhibit B B (Fisher). A.** *It is a mechanical equivalent."*

Such is the testimony of appellants' own expert, a man who has been a mechanic for thirty years, and who has set up and operated appellants' machines. His testimony alone is abundantly sufficient to prove an infringement of both the second and third claims. In the "Little Giant" we find a ball-and-socket joint connecting the discharge pipe and pipe section. That joint has only the vertical motion, as in Fisher's upper joint, and infringes the second claim. We also find in the "Little Giant" a joint formed by a ball-shaped enlargement fitting into a corresponding shaped socket, and that infringes the third claim.

III.

ANTICIPATION.

Only the second claim is alleged to be anticipated. The prior machines set up in anticipation are—

1. Allenwood (patented).
2. Jenkin W. Richards (not patented).
3. Quartus Rice (not patented).

The question of anticipation cannot be considered because of the defect in the record before noted. Models of the anticipating machines and also the patents (when patented) were offered in evidence in the old case of *Fisher* v. *Craig*, No. 1144, and, by stipulation, were used in the case at bar, as before noted herein. But none of the evidence in *Fisher* v. *Craig*, is in this record, nor have any of the models been brought to this Court. Therefore, we insist that the question cannot be examined here.

There does appear in the record some oral testimony in regard to these prior devices, consisting of expert testimony explanatory of their construction and mode of operation. That testimony is unintelligible without the models and patents, and must be disregarded *in toto*. We insist on this objection.

But taking that testimony as far as it goes, it shows no anticipation. We shall briefly consider it.

THE ALLENWOOD MACHINE.

This device was represented by a model, Exhibit J, and a patent, (neither of which is before this Court). Witness Hoskin says:

"It has two joints, one for getting horizontal motion, and the other vertical. One is a swivel metal joint; the other a flexible joint made of canvas, gum or leather, or any suitable flexible material." (Record 640.)

Taking this for what it is worth, it merely shows a machine consisting of a lower swivel joint and no upper joint at all, but a section of canvas hose in its stead, inserted between the base of the nozzle and pipe section. These machines are referred to in Fisher's patent, in recognizing the state of the art. The section of hose was not a *mechanical* joint. It gave a *universal* motion, lateral as well as vertical. This was its objectionable feature. It was unmanageable. It would "buck," and was dangerous to life and limb. So that, when in use, it had to be held in place by block-and-tackle and various other devices.

These machines were entirely superseded by those containing Fisher's invention, and that too through the instrumentality of these defendants. They owned the Allenwood patent, and yet they ceased to manufacture the machine, but instead thereof, manufactured and sold machines containing Fisher's invention. (Record 47.)

That the Allenwood was not a practical success, is best evidenced by the fact that in every part of California miners, manufacturers, and inventors were busily at work trying to invent a machine to take its place; and in each of these machines the difficulty was encountered in the construction of the upper joint—just where the Allenwood failed. It was not until Fisher devised his upper joint that the difficulty was overcome.

It seems idle to claim the Allenwood as an anticipation. It shows no ball-and-socket joint. It shows no ball-shaped enlargement fitting into a cup-shaped socket.

JENKIN W. RICHARDS' MACHINE.

There is no precise oral description of this machine in the record. Of course we cannot consider the model, because it is not here. The nearest approach we find to a description is that given by Fisher, viz:

> "Q. 67. Describe the operation of the Richards machine from the model put in evidence in the case of *Fisher* v. *Craig*. A. *It has two universal joints.* Q. 69. What do you mean by universal joints? A. They swing the whole sweep of a circle. * * * Q. 75. The joint in the Richards machine, which connects the discharge pipe with the upper curved section, is different from the joint which connects the discharge pipe with the upper curved section in your machine, is it not? A. Yes, sir. Q. 76. What is the difference? A. *It is a swivel joint* in the Richards machine, and mine is a ball-and-socket joint." (Record 585–6.)

Clearly this is no anticipation. The machine was a signal failure, for it was a worse "bucker" than Allenwood's. (Fisher's deposition, p. 585; Hoskin's deposition, p. 643.) Richards applied for a patent on the machine before he found out its worthlessness, and the patent was granted; but his disgust was so great at its conduct, that he failed to pay the final government fee, and his application lapsed and finally became forfeited.

QUARTUS RICE MACHINE.

This was represented by model, Exhibit G. (Record 593.) It had three joints (Record 594); but there is no clear description of the machine in the record, and we cannot ascertain what it was. We do know, however, that whatever it was, it was a flat failure. Only one of such machines was made, and Rice never thought enough of his idea to patent it.

None of the foregoing prior machines were successful. They were all tried, found wanting and discarded—broken up for old iron. They were all mere abandoned experiments. They cannot anticipate.

IV.

THE ACCOUNTING.

It is claimed by appellants that the master erred in the accounting, but what the precise ground for this contention is, we are not informed. The master made an elaborate report and the Court confirmed it. We are willing to rest this point on that report, which appears in the record at pp. 44-53. It is as able an argument as can be made, and we herewith reproduce the main part of it, without further comment:

> "The history of hydraulic mining appliances differs in no essential particulars from the ordinary history of the progress of invention in many other departments of the mechanical arts. For the purpose of washing down banks of earth or gravel, in order to secure the gold which they contained, machines by means of which powerful steams of water could be utilized were necessary, and it was desirable that such machines could be readily moved from place to place, and that when once placed in position they could be so manipulated that the stream could with ease and safety be directed against any desired portion of the bank. For obtaining these objects various devices of greater or less efficiency were, from time to time, introduced, commencing with the primitive fire hose and culminating in the double-jointed machine of the complainant—Fisher—a machine which was unquestionably a great improvement over the best hydraulic mining machines which had preceded it, a machine by means of which the practicability of using large streams of water under heavy pressures was greatly increased. The chief features of the Fisher invention, covered by the second and third claims of his patent, have been embodied and used to the greatest advantage in the infringing "Little Giant" machine by the respondents, Hoskin.
>
> "The manner in which the said respondents have conducted their hydraulic mining machine industry, furnishes most convincing evidence of the

superiority of the complainant's patented improvement. Prior to the 24th day of October, 1871, Richard Hoskin and the Craigs had for some years been engaged in the business of manufacturing and selling machines of this character. Upon that date a contract was entered into between them, the practical result of which has been to give to respondents Hoskin the monopoly of that business during all the time since the date of Fisher's infringed re-issued patent. Although the experience of said respondents had made them acquainted with, and they had the right to make and sell machines the best adapted to perform the required work, with the exception of a machine embracing the complainants' improvements, they have, during the whole period of their monopoly, until recently restrained by this Court, made no other machines than the Little Giant machine referred to, which owes much of its value to the Fisher invention. The adoption of that invention would seem, therefore, to have demonstrated that its use was necessary to adapt the infringing machine to the purpose required, and by reason of their use of that invention the infringers have been enabled to produce a superior machine, which met the requirements of the hydraulic miners, and completely controlled the market, and they have left open to the miners no other way of supplying their needs in this direction; and in a recent decision (*Manufacturing Co.* v. *Cowing*, 15 Otto, 225), it has been laid down by the Supreme Court that if the complainant's improvement is required to adapt the infringing machine to a particular use, and there is no other way open to the public of supplying the demand for that use, then it is clear the infringer has, by his infringement, secured the advantage of a market he would not otherwise have had, and that the fruits of this advantage are the entire profits he has made in that market.

" But the monopoly of respondents Hoskin, as well as the efficiency of their infringing machine, are not to be altogether attributed to their adoption of the Fisher improvement, but have been in great part owing to their having the right to use and using a device called the Macy and Martin Rifles, secured to said respondents by the Craig-Hoskin contract referred to. It is true that the Fisher double-jointed machine was much superior to any hydraulic mining machine theretofore introduced, but in order to attain the best results the rifles were necessary. It therefore becomes necessary in estimating the amount of respondents' profits, which are due to the infringement, to determine the relative values of the rifles and of complainants' patented features in the Little Giant machine. The claim of respondents that the value of their infringing machine has been materially augmented by the incorporation into it of improvements covered by the Hoskin pipe-coupling patent, does not seem to be well-grounded. The essential elements which go to make up the success of the Little Giant machine are evidently the Fisher invention and the rifles. 'The value of the infringing machine as a marketable article is properly and legally attributable to the patented features' of complainant, used in connection with the rifles. If any additional advantage is gained by the use of features covered by Rice's patent, the value of that advantage is established by the contract referred to.

“The view here taken is that the value in the infringing machine of the rifles is fixed by the Craig-Hoskin contract. At the time that the contract was entered into the Craigs were established in the business of the making and selling hydraulic mining machines, and were in a position to understand and to exact from Hoskin the full value of the right to use the rifles. A value was placed upon the rifle patent and agreed upon by the parties. If the value of the rifles in the Little Giant machine was greater than the value fixed by the contract, that fact is not shown by the evidence, and it is doubtful whether in any matter of this character the value of one of several patented elements in a machine could be determined upon a basis of greater exactness than that here taken.

“Under the circumstances, then, the value of the Fisher invention in the infringing Little Giant machine is the net profit made by respondents Hoskin, since the date of Fisher's re-issued patent, less the amount paid by them to the Craigs under the contract. It may be contended that that amount was paid as consideration, not only for the right to use rifles, but also for the right to use other patented features which contributed nothing to the efficiency of the Little Giant machine; but whether it be considered as having been in part paid for such valueless features, or as consideration for securing to the Hoskins a monopoly of the business, or as royalty for the use of the rifles alone, the amount paid to the Craigs under the contract included the royalty upon the rifles, and it was an expense incidental to the business of respondent Hoskin, and as such, should be deducted from the profits in this accounting.

“Whatever profits have been made by respondents Craig, have arisen from the assignment to Hoskins by them of patents which they owned, and complainants can have no interest in such profits.

“The conclusions reached in this matter may be briefly stated thus: By making and putting upon the market no machines except such as embraced the Fisher invention when they had a complete monoply of the business, and had the right to make and sell the best known hydraulic mining machines not embracing that invention, respondents Hoskin settled the proposition that only machines containing the Fisher improvement were marketable, and the value of that improvement is the value of the entire infringing machine, less the value of the features covered by another patent, which latter value is fixed by the Craig-Hoskin contract.

“Adopting this view, it becomes unnecessary to advert to several propositions ably and elaborately presented by counsel in their oral arguments and in their briefs.

“Respondents' net profits upon 355 infringing machines, (the number made and sold up to date of accounting) say		$26,665 33
Deduct bad debts	$125 00	
Deduct amount paid the Craigs	10,075 00	
		$10,200 00
Leaving as a balance		$16,465 33

"I have, therefore, ascertained, and do report that the number of hydraulic apparatus made and sold by the defendants, since the second day of September, 1879, the date of Fisher's re-issued letters patent, is three hundred and fifty-five, and that the gains, profits and advantages which the said defendants have received, or which have arisen or accrued to them since the date last aforesaid from infringing upon the exclusive rights of the complainants by the making and selling of the infringing machines referred to, amounted to sixteen thousand four hundred and sixty-five dollars and thirty-three cents, and that no damages sustained by complainants in addition to respondents' said profits, are due to said complainants, as no proper basis for the assessment of such damages has been proved or submitted.'

CONCLUSION.

We add but a word. Fisher's invention is a valuable one. It filled a long-felt want in hydraulic mining. It is theoretically perfect. No improvement has ever been made on it. It is known to every miner on the Pacific Coast, and, in some form or other, will be found in every placer mine there now operating. Without it, hydraulic mining on any considerable scale would be impracticable, and the millions of treasure which have been extracted by means of it, and thrown into the circulating medium of the world, would be lying in the bowels of the earth to this day. And yet, on account of the infringements by these Appellants, he has never reaped any benefit from his valuable invention. On the other hand, they have made large profits by their piracy. Between the date of the original patent and that of the last re-issue, they made and sold eleven hundred machines, for which they cannot be made to account. Their profits on those machines must have been enormous, for on the 355 which they made after the re-issue, they realized over $16,000 in clear profits. The patent has now expired. It is public property. Fisher can hope for no future benefit from it, further than the satisfaction of knowing that he has enriched the world by giving it one of those great modern inventions in which the present age is so prolific; and we ask this Court to grant him some small recompense for the fruit of his genius by affirming the decree.

Respectfully submitted,

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Att'ys for Appellees.

APPENDIX.

[REPORT OF CHAS. WALDEYER ON HYDRAULIC MINING.]

A single hydraulic nozzle, connected by an iron pipe of any length with a distributor, which latter is again connected with the feeding-pipe receiving the water from the bulk-head of a ditch or reservoir, has been placed at a safe distance from the gravel bank to be washed, a screw attached to the distributor (for the purpose of opening or shutting a gate commanding the connection and flow of water between the distributor and the hydraulic nozzle) is turned and a stream of water issues from the nozzle. This stream increases in size and strength as the gate opens more and more, and after a few minutes a body from five to seven inches in diameter, and representing from 500 to 1,000 miner's inches, plays with magnificent force against the opposite bank of gravel. The water issuing from the nozzle is to the touch as hard as a bar of steel, and retains, when thrown from a good nozzle, its cylindrical and condensed shape until it strikes the bank. The effect of this lance-thrust of water against the bank is scarcely visible. At the first shock, a thousand rays of water fly in all directions; a little later the lance has buried itself deep in the bosom of the bank, and the water boils and hisses over the lips of the aperture carrying with it gravel, sand, clay, and whatever other material may be at hand. The opening widens; flakes of gravel tumble in all directions; an arch, wide and deep, is made in the gravel bank. The 'jambs' of the arch to the right and left are demolished by turning the jet of water upon them, and the first 'cave' in the hydraulic mine takes place.

"The caved material is then washed into the sluice-boxes, good care being taken that an even flow is maintained and that the boxes are not overcharged. Pieces of hard gravel, clay, cement, etc., too large to be washed through the sluice-boxes, must be reduced to smaller fragments by either the pick or blast. For all such material as can be perforated by the churn-drill or augur, the process of blasting with Giant powder is considered the cheapest and most effective. Rocks and boulders, too large to be sent down by the sluice-boxes, must be first broken up. When sufficient clearance has been made to leave ample space for the disposition of heavy boulders, tree stumps and other rubbish, either a derrick, or wheelbarrow, or cars can be employed to remove such objects to the place of deposit. Even with abundance of room, it will be advisable to go systematically to work and keep certain order in the arrangement. This plan will accustom the working men to dispose at once of any incumbrance *for good, and at the right place*, and will save a great deal of work in the long run. In working a hydradlic mine it must be the aim to secure, as soon as possible, a large open front, so as to occupy two, three or more hydraulic nozzles, according to the supply of water and general capacity of the works

"These different hydraulic nozzles, being supplied from the same distributer, can open a 'cross fire' upon any point within 200 feet from the nozzles, and thus do great execution."